THE NEWSWEEKLY OF INFORMATION SYSTEMS MANAGEMENT
May 27, 1991 · Vol. XXV · No. 21 · 120 Pages · $2/Copy · $48/Year

COMPUTERWORLD

Red Cross IS prepped for transfusion

BY JEAN S. BOZMAN
CW STAFF

SAN DIEGO — The American Red Cross will shut down its blood centers on a staggered basis to replace computer systems that have contributed to safety problems in processing the nation's blood supply.

A move toward standard systems and centralized data reporting is intended to counter incompatibilities among the computer systems now in use at 53 centers around the nation.

"These diverse computer systems were responsible for fully 25% of the citations made by the FDA in the last year," according to a Red Cross statement on the computer overhaul plan issued last week.

The Food and Drug Administration has found many safety flaws in local centers — citations

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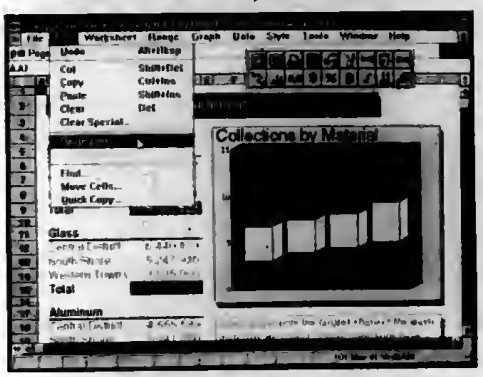
It's here . . . well, almost



Comdex/Spring '91 attendees *were queuing up to view Lotus Development Corp. demonstrations of 1-2-3 for Windows, which will not be formally introduced until sometime during the summer. Coverage of Lotus' Windows strategy and other Comdex developments is on pages 106-108*

IBM plans stronger 386 upgrade push

Exec says users request credit for old systems

BY PATRICIA KEEFE
CW STAFF

ATLANTA — IBM is mulling over a trade-up program for Intel Corp. 80286-based computers that could include bundled OS/2 — or, if users demand it, Windows 3.0 — as a way to jump-start sluggish sales.

The idea takes a page from IBM midrange and mainframe marketing by working with IBM Credit Corp. to assist users with "inventory planning," IBM Vice President Joseph Guglielmi said in an interview last week.

He said several large accounts, which he declined to identify, with thousands of 286s each, have specifically asked for a trade-in program. As a result, IBM will probably pilot some type of trade-in program this summer with selected accounts on "specific bids," Guglielmi added.

Among the "full suite of options" IBM is either considering or has already committed to are the following:

- Shipping "OS/2-ready" Intel 80386s complete with 4M bytes or more of memory by the end of the year.
- Bundling OS/2 with every 386 it ships, either directly or through the dealer channel.
- "Inventory planning," or the 286 swap-out program targeting accounts with 1,500 or more such units.
- Additional pricing and service incentives for large accounts.
- An OS/2 "starter set" for retail walk-in trade that would provide a "better DOS than DOS." Users would be able to run DOS applications faster under a preinstalled OS/2.

So far, users seem wary. Most, like Rodger Bender,

Continued on page 107

Betting the future on grand plans

Last in a three-part series researched and written by Computerworld *staff members Rosemary Hamilton, Johanna Ambrosio, Patricia Keefe and Kim S. Nash.*

IBM SOFTWARE GIANT IN TRANSITION

IBM's future as a software provider holds both promise and doubt. The promise is that the company has made software a priority and is working feverishly to deliver on its grand architectural strategies and other key areas. But given IBM's prior spotty software performance and a host of other factors, observers are wondering whether it can deliver.

It is essential for IBM to do so. As hardware margins continue to fall, IBM must derive more of its revenue from software and services. To help meet this goal, IBM executives said, they are counting on initiatives such as Repository Manager and AD/Cycle, as well as the firm's relationships with third-party vendors and an increasingly important services business.

"IBM is changing from having high-priced hardware and giving the software away to charging high prices for software and giving the hardware away," said Bob Djurdjevic, president of Annex Research in Phoenix. "We're now midway through a transition in the way that the company does business."

Although IBM's huge installed base buys it some time, it risks losing market share in key areas. Some of IBM's major mainframe customers, including J. C. Penney Co. and Aetna Life and Casualty Co., have already adopted non-IBM applications development software — essentially

Continued on page 8

Multivendor LAN managers

COMPUTERWORLD BUYER'S SCORECARD

Users of Sun Microsystems, Inc.'s Sunnet Manager LAN network management software give it the highest score (56 out of a possible 76) in ability to manage other vendors' equipment

See Buyers' Scorecard page 76

Product	Score*
Response base: 79	
Sun's Sunnet Manager	56
Hewlett-Packard Co.'s Openview Network Node Manager	53
IBM's Netview Network Manager 6000	39

*Scores are based on product ratings from each user group, combined with the importance ratings users assigned to the criteria.

CW Chart: Doreen St. John

May I say who's calling?

BY ELISABETH HORWITT
CW STAFF

Armed with corporate success stories and converts picked up during the past year, call identification services seem to be on the verge of fulfilling their early promise as the magic application that will finally put Integrated Services Digital Network on the user map.

With the help of U.S. Sprint Communications Co.'s automatic number identification offering, or ANI, Florist Transworld Delivery Association started a service that pulled in $1 million in revenue in the first six months of operation. Called "Flowers After Hours," the service handles after-hours calls for florists throughout the country. When a customer calls a member florist after hours, the call is routed to an FTD call center.

At the same time, the florist's trunk telephone number is sent to the center via ANI and matched with a database containing the florist's location, specials and prices. "Customers get the impression they are dealing with a 24-hour local florist," said Michael Lindquist, FTD's network operations manager.

Some 500 florists have signed up for the new service so far, generating more than $1 million in additional profits to date, Lindquist said.

While some 4,000 to 5,000 businesses now use ANI, the market will grow only 10% to 11% per year for the next two or three years or until the

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INSIDE

Peter Yates

Outsourcing is a way of life at Diesel Technology Corp. President Derek Kaufman explains why in The CEO View in Manager's Journal. Page 61.

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6 Now available: Covia is putting some of its internally developed technology platforms and services on the open market.

7 A federal judge is expected to consider Apple's motion to include Microsoft's best-selling Windows 3.0 interface in a broadened version of a 3-year-old copyright lawsuit against Microsoft and HP.

8 Software buyers and makers were alarmed when IBM unveiled its Application Systems Division in July 1987, but four years later, analysts say, competitors are no longer alarmed.

10 IBM denies that the Displaywriting is on the wall for its word processing package, vowing continued support and enhancements.

14 Observers predict the Public Utility Commission will approve the use of call ID with the proviso that local carriers give users the option of blocking the information from being sent.

107 Slashing and burning continue on the PC front, with IBM announcing PS/2 price reductions in response to recent Compaq cuts.

109 Apple's proposed paring could yield juicier technology and timelier results for users.

Quotable

"Many of our clients want to shelve their 286s, but the CFO is telling them no, because they haven't been depreciated yet."

FRANK DZUBECK
COMMUNICATIONS NETWORK ARCHITECTS

On IBM upgrade plans. See story page 1.

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PRODUCT SPOTLIGHT

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The 5th Wave

"OH, SURE, $1.8 MILLION SEEMS LIKE A LOT RIGHT NOW, BUT WHAT ABOUT RANDY? WHAT ABOUT HIS FUTURE? THINK WHAT A COMPUTER LIKE THIS WILL DO FOR HIS SAT SCORE SOMEDAY."

EXECUTIVE BRIEFING

■ **Automatic number identification is gaining momentum** as a business application, potentially spurring ISDN growth. FTD florists, for example, create the impression of a 24-hour local florist by matching after-hours calls with a database of member florists. However, deep concerns remain over privacy issues, which courts and regulators will continue to debate. **Page 1.**

■ **One CEO's view of outsourcing** is very positive. Diesel Technology President Derek Kaufman decided three years ago to contract with EDS instead of setting up an internal IS shop at the Grand Rapids, Mich.-based manufacturer. Kaufman gives the strategy high marks, preferring a one-stop IS shop to "hardware vendors who just drop off manuals" and IS professionals who have "developed their own language." **Page 61.**

■ **Covia is going commercial,** selling internally developed software on the market in an effort to shore up profits of its airline members debilitated by the effects of the Persian Gulf war. New CEO Allan Loren named former CIO Mark Teflian to head the new unit, called Covia Technologies. **Page 6.**

■ **IBM wants your 80286-based PCs.** The firm is mulling a trade-in program that may bundle OS/2 or Windows 3.0 if users request it. The program, expected to begin selectively this summer, is an effort to jump-start sluggish sales of 386-based machines to corporate buyers. **Page 1.**

■ **Point-of-sale systems at Denny's restaurants** have increased revenue and saved restaurant managers in each store about 14 hours per week in paperwork. The chain is in the midst of a four-year POS rollout that will eventually encompass 1,000 stores in 46 states. **Page 81.**

■ ***Computerworld* names a new publisher:** Gary Beach, formerly publisher at *Network World*, takes over the reins from Fritz Landmann. **Page 4.**

■ **The Red Cross' migration to new computers** will necessitate a staggered shutdown of its 53 blood centers nationwide, beginning this summer. HP 3000s and IBM AS/400s will likely replace the current systems, which suffer from a lack of standards and networking. **Page 1**

■ **IBM slashes PC prices 6% to 24%** as the PC price war rages on. Suffering dealers are ecstatic, but users say the cuts will not automatically lure them away from cheaper clones. **Page 107.**

■ **Less expensive FDDI availability** could result from a consortium of five vendors promoting a shielded twisted-pair alternative to fiber. Analysts say high-end users could see cheaper offerings within six months, although most users still do not need the 100M bit/sec. bandwidth of FDDI. **Page 4.**

■ **IBM's future as a software vendor** will follow one of two scenarios: Either IBM will deliver on its enterprisewide software promises and be a leading systems integrator, or users will turn their backs on strategies such as AD/Cycle and IBM will become "just another big company." Last of a three-part series. **Pages 1 and 8.**

■ **There will never be a one-stop solution** to integrated network management, experts say. You can put some pieces together as vendors adhere to emerging standards and form alliances with one another, but you're still likely to end up in a tangle of systems. **Page 71.**

■ **On-site this week:** Burger King didn't exactly need a whopper of a system, but its Consumer Response Line processing requirements quickly outgrew a PC LAN, so it now uses an AS/400 to support the successful customer service initiative. **Page 27.** American Airlines sales reps promote something special in the air with a laptop-based SMARTS application that uses Borland's Paradox database. **Page 41.**

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Vendors agree to FDDI alternative

BY JOANIE M. WEXLER
CW STAFF

LITTLETON, Mass. — Five networking vendors took strides last week to spur lower Fiber Distributed Data Interface (FDDI) prices when they shook hands on a cheaper, shielded twisted-pair alternative to fiber's current 100M bit/sec. monopoly.

The agreement to support a standard, interoperable specification for 100M bit/sec. data rates over shielded twisted-pair wiring was made by Digital Equipment Corp., Chipcom Corp., Synoptics Communications, Inc., Advanced Micro Devices, Inc. and Motorola, Inc. at the DEC offices here. The copper alternative is intended for backbone-to-desktop data transfers.

In addition to providing healthy competition to fiber, the fact that the same chip set is used for both shielded twisted-pair and fiber should boost chip set volume and drive costs down, according to Michael Howard, president of Infonetics Research Institute, Inc. in San Jose, Calif. The chip set accounts for 20% to 30% of an FDDI connection cost, Howard said.

The move could provide a cost-effective way for users to get 100M bit/sec. rates to the desktop within six months as actual products start shipping, said Janet L. Hyland, director of network strategy research at Forrester Research, Inc., a consulting firm in Cambridge, Mass. Most users, however, will not need that kind of bandwidth on the desktop for at least two years, other analysts said.

IBM's role

IBM was not a part of the announcement, although most firms wired with shielded twisted-pair today are IBM sites. IBM is pursuing its own 100M bit/sec. over shielded twisted-pair technology and recently told *Computerworld* that it will begin rolling out 100M bit/sec. over copper products at the end of the year.

The consortium members would say only that their technology is similar to IBM's and that they will all end up supporting the official standard at some point. In the interim, however, there is no guarantee of interoperability among IBM products and products that members of the consortium might introduce.

Cabletron Systems, Inc., which competes with DEC, Synoptics and Chipcom in the smart-hub arena, said it will skip the shielded twisted-pair step and hold out for the more widely demanded specification for 100M bit/sec. data rates over unshielded twisted-pair wiring.

"Within 18 months, the standards committee will have a specification for unshielded twisted-pair, which is what the world wants," said Chris Oliver, Cabletron's director of manufacturing and engineering. Oliver said that in 1990, Cabletron shipped 300,000 Ethernet nodes, only 1% of which run over shielded twisted-pair wiring.

The single specification now sanctioned by the five firms is available to any other firm free of charge. Internetworking vendor Cisco Systems, Inc. has already stated that it will support the consortium's standard.

From a standing start

The ability to provide 100M bit/sec. connections to desktops over shielded twisted-pair wiring would overshadow fiber-based FDDI in the desktop

Number of PC nodes installed running at 100M bit/sec.

	Fiber (FDDI)	Shielded twisted-pair
1990	3,200	—
1991*	13,000	4,000
1992*	22,000	49,000
1993*	43,000	151,000

* Projected

Source: In-Stat, Inc. CW Chart: Janell Genovese

Red Cross

FROM PAGE 1

that led to the shutdown of Red Cross centers in Albany, N.Y., and Washington, D.C., last year.

American Red Cross President Elizabeth Dole, speaking at the annual Red Cross convention here last week, outlined a program to overhaul Red Cross operations at a cost of $120 million, one-third of which is to be spent on hardware and software.

Beginning this summer and continuing until 1994, the program calls for temporary shutdowns of all local Red Cross blood centers, allowing several months for staffers to be trained in the use of more standardized systems. Other sites will pick up the data processing responsibilities of the closed centers.

"Between three and six blood centers could go down at a time," explained Red Cross spokeswoman Elizabeth Hall. "They'll stop collecting blood and recruiting donors — they'll stop everything except distributing blood. Then they'll go through eight weeks of transformation, during which they'll be equipped with compatible links to the new computer systems."

Test consolidation

Testing of blood will be moved from the 53 local centers to eight regional testing laboratories, and a common blood-testing software application will be used by all testing centers.

The Red Cross would not comment on the types of computer systems being considered for the new standard software platforms; some Red Cross sources said final decisions had not been made. The $120 million budget will include $80 million for personnel, training and downtime costs at the closed centers and $40 million for new hardware and software systems.

"Each center is using one of 10 different software applications systems, but there's no telecommunication between them," said Arne de Beaufort, general manager of administration at the Red Cross' Blood Services Division. "We'll end up with eight central labs, and they will be connected to each other on a network."

Probable platforms

The most likely hardware platforms will be Hewlett-Packard Co. HP 3000 minicomputers, which are widely used at the testing centers, and IBM Application System/400 midrange computers, de Beaufort said. The installed HP 3000s and AS/400s currently have no standard communications or database structures, hampering blood-donor identification and tracking procedures.

The Red Cross will also revamp its centralized Donor Deferral Registry (DDR) in Washington, D.C. "There are national DDR standards, and there are also local ones. We are going to streamline the whole process with a consistent definition of deferral codes.

"We need to have a standardized way of keeping track of [donor] deferrals on the database," de Beaufort said.

Beach named publisher of *Computerworld*

FRAMINGHAM, Mass. — Gary Beach, formerly publisher of *Network World*, took over last week as publisher of *Computerworld*.

Beach replaces Fritz Landmann, who was promoted to senior vice president at Boston-based International Data Group, parent company of *Computerworld*. Landmann will also serve as director of IDG's global resource development.

Beach: *"IS is not swimming upstream anymore."*

Beach, 40, led *Network World* to a leadership position among data and voice communications publications since being named president and publisher in 1987. Before that, he was advertising sales manager at *Data Communications*, a McGraw-Hill, Inc. magazine.

"I'm really excited," Beach said. "I don't think there has been a better time to join an operation like *Computerworld*. The sense that our readers in IS can have a positive impact on their enterprises has never been higher.

"Corporations have seen the power and positive impact of technology on their employees and their operations, and more technically proficient managers are moving into corner offices," he said. "IS is not swimming upstream anymore."

Beach holds a degree in urban affairs from Manhattan College in New York.

CORRECTIONS

Users of Cupertino, Calif.-based Apple Computer, Inc.'s Macintosh Models SE/30, IIX and IICX can take advantage of the virtual memory feature of System 7.0 — but only in limited amounts (CW, May 20). The three Macintoshes have the coprocessor necessary to use the feature, but they are built with 24-bit read-only memory (ROM) rather than the 32-bit ROM needed for full virtual memory use. Misstatements by Apple officials led *Computerworld* to report otherwise.

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In the April 22 Marketplace article, Zero Surge, Inc.'s location was incorrectly listed as Princeton, N.J. The company is located in Bernardsville, N.J.

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NEWS SHORTS

Slow growth for CA

Computer Associates International, Inc. announced single-digit revenue and net income growth last week for its 1991 fiscal year ended March 31. Revenue for the year was $1.348 billion, an increase of 4% compared with the previous year. Net income for fiscal 1991 was $159.295 million — 86 cents per share — vs. the year-earlier figure of $157.751 million, or 85 cents per share. Meanwhile, Novell, Inc. continued its skyward financial movement during its second fiscal quarter with a 25% jump in net revenue and an 87% increase in net income. Net revenue hit $150.2 million, compared with $120 million for the second quarter last year. Profits rose from $20.5 million last year to $38 million.

Setback for electronic shopping

Prodigy Services Co. said it would shelve its electronic grocery shopping service. The White Plains, N.Y., company, a joint venture of IBM and Sears, Roebuck and Co., recently cited insufficient customer demand in deciding to cancel the 3-year-old service, which allowed Prodigy users to order goods through participating local supermarket chains.

Federal PC buy goes to Sysorex

The U.S. Department of the Treasury awarded a contract worth up to $400 million to Sysorex Information Systems, Inc. in Falls Church, Va., for as many as 65,000 desktop and laptop computers, peripherals, 5,000 local-area networks, applications software and support services. The contract, called Departmental Microcomputer Acquisition Contract, provides a common procurement mechanism for the department.

Sony offers $699 multimedia set

Sony Corporation of America hit the consumer market last week with a personal computer-based multimedia package priced at just $699. The system, aimed at the home and school markets, includes a Sony compact disc/read-only memory optical disc player and six information, learning and entertainment programs. The Laser Library is designed to run on IBM Personal Computer XTs, ATs and compatibles.

Air isn't free — but it is cheaper

To fuel the fledgling wireless LAN market, Motorola, Inc.'s Radio-Telephone Systems Group last week dropped the price of its Altair wireless LAN module from $3,495 to $995.

On-Line updates Ramis

On-Line Software, Inc. of Fort Lee, N.J., has announced the immediate availability of Ramis Information Release 7.2, the company's end-user information management system. The latest version reportedly includes a SQL Window, enhancements to the MVS/CICS and File Expert interface and enhanced MVS/XA/ESA support. The product is priced from $25,000 to $170,000 depending on operating environment and CPU size.

Export rules eased

The U.S. and its allies relaxed controls on the export of computers and telecommunications equipment to the Soviet Union and Eastern Europe, but trade industry officials expressed disappointment that the relaxation did not go further. Intel Corp. 1486/33-MHz computers, Digital Equipment Corp. VAX 6410 minis and similar machines may go without an export license. Fiber-optic telecommunications equipment was not approved for export to the Soviet Union as it had requested.

Lowe moves on

William Lowe, a key player in IBM's successful effort to dominate the PC hardware market, has left Xerox Corp. to become president and chief operating officer of Gulfstream Aerospace Corp. in Savannah, Ga. He left IBM in 1988 to join Xerox as an executive vice president of manufacturing and development.

Covia unit spreads its wings

Newly formed subsidiary taking in-house technology onto open market

BY ELISABETH HORWITT
CW STAFF

ENGLEWOOD, Colo. — Covia Corp. is putting some of its internally developed technology platforms and services on the open market through a recently formed subsidiary, Covia Technologies.

Mark Teflian, formerly chief information officer at the parent company, is president of the new unit. Teflian said the strategic move to commercialize Covia's technology was established by Allan Loren soon after Loren became Covia's chief executive officer last January.

"We were starting to leverage value in Covia but not focusing on the underpinnings needed to be successful in the market," Teflian said.

Covia's co-owners are UAL Corp., USAir and Air Canada in North America; and Swissair, British Airways, Alitalia Airlines and KLM Royal Dutch Airlines in Europe.

A few quick sales by Covia Technologies would provide the firm's co-owners with a much-needed infusion of cash, according to Paul Nisbet, a senior airlines analyst at Prudential Securities, Inc. Airlines worldwide are still recovering from the effects of the Persian Gulf war, but this is a time when they face "all sorts of opportunities to expand and to take over route structures" from their failed competitors, Nisbet said.

Teflian said *Covia wasn't focusing on the underpinnings needed for market success*

Covia Technologies' flagship product is a software platform called Communications Integrator, which was originally developed for United Airlines. The platform is said to facilitate the development of distributed applications across disparate systems without the need to rewrite a program for each new operating system or communications environment. The platform was designed to support on-line transaction processing environments such as airline reservation systems, Teflian said.

Signed, sealed, delivered

The subsidiary signed its first contract on May 1, selling the Communications Integrator to European airline reservations and information systems subsidiary Galileo International Ltd.

The subsidiary also plans to leverage Covia Corp.'s artificial intelligence expertise and applications, which include expert systems to manage airport gate assignments and flight rescheduling and seating changes, Teflian said.

High on Teflian's priority list right now is establishing partnerships with companies that can expand his company's distribution channels. Last April, Tandem Computers, Inc. and Stratus Computer, Inc. agreed to port the system to their platforms.

Ingres users confident of Ask support overall

BY JEAN S. BOZMAN
CW STAFF

SAN JOSE, Calif. — An air of confidence surrounded longtime users of the Ingres database management system when they gathered for their first national meeting since Ask Computer Systems, Inc. acquired Ingres Corp. last year.

The longtime Ingres users seemed pleased with what they heard as Ask executives outlined their plans for the product line. "This is a very optimistic group [of executives]," said North American Ingres Users Association (NAIUA) President Rick Angelini. "The last set of managers was very defensive. It seemed like they were always on the run from competitors like Oracle [Corp.]."

Angelini said Ingres Corp., founded in 1980 as Relational Technology, Inc. by University of California at Berkeley professors, was known in recent years for leading-edge technology and trailing-edge marketing.

"The business tenor is much more upbeat," said Becky Stokes, a Salt Lake City systems analyst who was NAIUA's president last year. "I have a great sense of confidence in this new group of executives and their ability to market the Ingres products."

A few concerns about Ingres product direction did surface, however. Some were sparked by Eric Carlson, Ask's executive vice president, who said several yet-to-be-named products would be terminated through a "sunset" program.

> "I HAVE A great sense of confidence in this new group of executives and their ability to market the Ingres products."
>
> BECKY STOKES
> FORMER NAIUA PRESIDENT

Good news

However, users applauded Carlson when he promised to extend the life of Ingres Release 5.0 by "maintaining it into the indefinite future," noting that many Ingres users have not yet converted to the Ingres 6.3 relational database management system.

Carlson said the Ingres Windows/4GL graphically oriented applications generator would soon support both the Microsoft Corp. Windows 3.0 and the Apple Computer, Inc. Macintosh user interfaces. The next-generation Ingres 6.4 RDBMS — which will embed business rules and triggers inside the database engine — will go into a beta-test program this summer, he said, followed by shipments some time in early 1992.

The presentations by Ask officials were remarkably free of references to Ask products — except for the keynote speech by Ask Chief Executive Officer Sandra Kurtzig.

Kurtzig firmly denied what she called "rumors" that Ask's traditional emphasis on manufacturing would stunt the development of other types of Ingres applications programs. A set of financial systems, the first of the Advance generation of Ask products to be built on top of the Ingres database and the Unix operating system, is set to debut in 1992. Kurtzig noted that 60% of Ingres users are not in the manufacturing sector.

Gladiator enters the ring

Unisys clusters 2200-series CPUs for transaction processing

BY SALLY CUSACK
CW STAFF

BLUE BELL, Pa. — Positioning itself to meet the future needs of a high-end user base, Unisys Corp. last week introduced a fault-tolerant mainframe clustering technology for transaction processing-intensive applications.

The preintegrated, multihost-based Gladiator series systems are based on multiple 2200/400 and 2200/600ES mainframe systems and offer performance of approximately 3,000 transactions per second, the company said.

Currently, the 2200 series can couple up to six processors on its 2200/400 model and up to four processors on the 2200/600ES system. At present, the company's other mainframe line, the A series, does not have the ability to cluster two separate processors.

Gladiator will be delivered in phases and will accommodate as many as 24 processors housed in up to four interconnected mainframe hosts.

These will synchronize multiprocessor and multihost access to individual records maintained in central databases, the company said. The product line also offers database recovery and sophisticated fault-tolerant performance capabilities.

David M. Card, director of systems research at International Data Corp., a Framingham, Mass.-based research firm, likened Gladiator to IBM's Sysplex, a computing strategy announced last September.

Card noted that while Gladiator's feature set is similar to that of Sysplex, overall the Unisys offering seemed "less complicated" than the IBM.

"It is good, solid technology," Card said, "but Unisys has to convince both the customer base and the sales forces they are competitive at the high end. They need a big hit."

Unisys is hoping to appeal to customers with high-volume, mission-critical online transaction processing applications such as airline reservations systems and financial institutions.

Current Unisys customers are realizing a built-up demand for fault-tolerant computing, said Thomas R. Murphy, president of Use, Inc., a 650-plus-member Unisys user group. Murphy added that while users may not rush out to buy into Gladiator tomorrow, they do realize it is a technology they will need in the not-too-distant future.

"We are not talking any more than a couple hundred target customers for this product," said Jim Cassel, vice president of large computer strategies and services at Gartner Group, Inc. "It is good news for the 2200 customer, as the company has prepackaged all the coupling software for the user. This will make installation relatively easy."

According to Max Feuer, program manager for the product, the systems will operate with existing customer systems software including fourth-generation languages such as Unisys Link and Mapper. The product also offers the Unisys Record Lock Processor technology and a specially packaged version of the current OS1100 multihost operating system.

Unisys Gladiator series Release 1, which will be available in the fourth quarter, consists of five 2200/400-based systems and ranges in price from $2.95 million for a two-host configuration to $11.09 million for a four-host configuration.

The Gladiator series Release 2 is scheduled for delivery in the first quarter of 1992 and will consist of four 2200/600ES systems ranging in price from $9.59 million to $50.71 million.

Judge to rule on Windows 3.0 tiff

SAN FRANCISCO — A federal judge is expected to rule next month on whether Apple Computer, Inc. can expand the scope of its copyright lawsuit against Microsoft Corp. and Hewlett-Packard Co.

At a status hearing last week, U.S. District Judge Vaughan Walker scheduled a hearing for June 14, at which he is expected to consider Apple's motion to include Microsoft's best-selling Windows 3.0 interface in a broadened version of the suit.

Apple sued Microsoft and HP in March 1988, charging that the overlapping windows and icon manipulation screen features in Windows 2.03 and HP's New Wave violate Apple copyrights. Apple's original charges have since been winnowed to include just 10 of nearly 200 points of alleged infringement.

Attorneys from Microsoft and HP said Apple's proposed addendum is an attempt to restyle rather than amend the charges. "It's as if we were on the five-yard line heading for the goal, and now Apple wants to play lacrosse instead of football," Microsoft attorney David McDonald said.

Apple maintained that Windows 3.0 is fair game. "The lawsuit was brought against Windows 2.03 and all derivative works, and we've always believed that Windows 3.0 was a derivative work," Apple spokesman Christopher Escher said.

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Future

FROM PAGE 1

turning their backs on AD/Cycle.

Given these and other issues, two scenarios for IBM's future are emerging. One says IBM will deliver on its grand architectural strategies (see chart at right), continue working with third parties and standards bodies to build consensus and transition to a role of systems integrator.

A bleaker picture shows IBM losing market share and becoming just another big company.

To keep that from happening, IBM is focusing on three areas:

- Delivering Systems Application Architecture (SAA), AD/Cycle, Systemview and other pieces of its architectures.
- Partnering with third-party vendors to offer software and services IBM does not provide.
- Beefing up its high-margin integration and services component.

IBM broke with tradition last month when it hired an outsider — Bob Howe from Booz, Allen & Hamilton, Inc. — to head up its Consulting Practices and Operations Group.

IBM's overall software strategy is "focusing on delivering solutions — things that are complete in their framework and their building blocks," and which are provided by both IBM and third parties, said Steve Mills, assistant general manager of finance and strategy in IBM's Programming Systems line of business.

For the immediate future, analysts said, IBM's primary objective is to continue its strategy of controlling accounts by selling grand plans such as Officevision and Systemview and integrating third-party software.

There are several challenges there. Grand plans are difficult to execute in a fast-changing industry, and IBM has had to scramble to adapt to such changes as the rise of open systems.

Also, customers are not necessarily buying into the strategies. Some, like Terry Louder, vice president of technology research at Banc One Services Corp., will consider only software that is compliant with IBM's Common User Access interface. "We have SAA on our list of requirements," Louder said.

However, David Evans, vice president and director of information systems at J. C. Penney in Dallas, said, "We're not doing anything with AD/Cycle, and I don't need to. They've been talking about it for years, but they've been long on talk and short on delivery." J. C. Penney bypassed AD/Cycle for Texas Instruments, Inc.'s Information Engineering Facility.

Nor is everyone convinced that IBM can pull off these grand strategies. "I certainly applaud their efforts in the whole SAA and AD/Cycle arena," said Jim Stuber, a vice president at Mellon Bank Corp. in Pittsburgh. But "I think they still don't understand what software development is all about, so I am concerned about the delivery."

Misleading beliefs

IBMers said the perception that the company has failed to deliver what it promised is unfair. "If you track all the way back to the interfaces announced in 1987, those have been met," Earl Wheeler, IBM's general manager for Programming Systems, said in an interview in February. But he said the standard has changed and expanded since then.

Wheeler said IBM will deliver products within two to three years after architectures are announced.

At the same time, IBM is increasingly leaning on third parties to fill in product gaps (see chart this page).

Equity investments in some of the independents directly benefit IBM financially and encourage third parties to port software to IBM platforms.

No automatic advantage

Customers said they welcome the partnerships but noted that they do not necessarily give IBM business partners an advantage.

"A relationship with IBM certainly helps a software vendor get in the door," said Lawrence Bacon, senior vice president at Travelers Insurance Cos. "But in no way do we exclude vendors that are not IBM partners."

There are other challenges for the company to overcome: IBM must do a better job of providing software for the desktop, particularly that which links to the mainframe (see story page 12). This is "a critical strategic thrust that we're on, and we believe we're making progress," Mills said. It must also change its culture to reflect a software orientation.

Within reach

IBM should be able to meet its goal of growing software and services revenue at the same rate as the industry in general, according to most analysts.

Although IBM refuses to disclose specific revenue goals, Clifford Friedman, an analyst at Bear Stearns & Co. in New York, said the firm has set its sights on having software and services account for 45% of total revenue by the mid '90s. "They can do it," Friedman said. In 1990, software and services made up 31% of IBM's total revenue.

Computerworld estimated that some 80% of the 1990 total was derived from systems software on all platforms.

Rick Martin, an analyst at Prudential Securities, Inc. in New York, said IBM should be able to continue to increase its software business at least 15% per year, despite its low profile in the personal computer market.

IBM raises high-end software prices 7% or 8% per year, he said, and the rest will come from the mainframe software market's general expansion.

Grand plans

IBM has recently hatched several major strategies to bring varied products under a common umbrella

Systems Application Architecture (SAA)

Introduced in 1987 as a way to unite IBM's many product lines, it is now the basic structure on which all other strategic initiatives are built

AD/Cycle

The IBM applications development initiative released in 1989. The first to tightly tie in third-party products, it provides management, tools and procedures for creating software

Systemview

Announced in 1990, it uses the same framework approach as AD/Cycle but addresses systems management issues ranging from network management to capacity planning

Officevision

This troubled office automation plan was positioned as the first big SAA application at its 1988 announcement but has been plagued by delays. Analysts think Officevision will undergo a transformation and become more of a framework, like its big brother, AD/Cycle

Data Warehouse

The unofficial name for a soon-to-be-announced architecture that will address corporatewide data access

CW Chart: Janell Genovese

Stake, well done

Since 1988, IBM has invested about $600 million in 42 software companies worldwide, backing firms that fill IBM product gaps

SELECTED EQUITY INVESTMENTS

Company	Product or service	Original investment
American Management Systems, Inc.	Industry-specific services and applications	$18M
Bachman Information Systems, Inc.	CASE, re-engineering	Not available
Computer Task Group, Inc.	Software and services	$21M
Easel Corp.	CASE, graphical user interfaces	$15M
Hogan Systems, Inc.	Banking applications	5% of company's stock
I/NET, Inc.	Imaging systems	$4M
Image Business Systems Corp.	Imaging systems	$6M
Index Technology Corp.	CASE	$2.5M
Metaphor Computer Systems, Inc.	Decision support systems	$10M
Policy Management Systems Corp.	Insurance applications	$116.5M

Source: Broadview Associates

CW Chart: Doreen St. John

From systems to solutions

Software buyers and makers were alarmed when IBM unveiled its Application Systems Division (ASD) in July 1987. Smaller firms feared stiff competition from a new group devoted to creating and selling homegrown and third-party applications. Users envisioned shrunken options as IBM took over the applications software market.

Four years later, the division has not justified the initial uproar, according to Marty Ressinger, technology analyst at Duff & Phelps Investment Research Co. in Chicago.

Renamed Applications Solutions Division in 1990, Milford, Conn.-based ASD today looks like a new animal. Although ASD was out front with Systems Application Architecture (SAA) marketing responsibility, that was later moved to another division.

Five months ago, ASD lost Officevision, IBM's office systems environment and first user-oriented SAA-compatible product. ASD head Anne-Lee Verville declined to comment on the shift, but analysts said IBM made the switch to spur Officevision development, which has been late from the start.

ASD now develops internally and installs at customer sites cross-industry technologies, including scientific and technical computing, imaging and electronic data interchange. Verville would not name a figure but said "some of [these] applications are major contributors" to IBM's bottom line.

Analysts are not so sure. The division is probably less important to IBM right now than it might be down the road, Ressinger said, because it handles technologies that are not yet entrenched in mainstream computing.

Even as ASD has slimmed down and rearranged itself, however, a parent organization with other software responsibilities has grown up around it. Formed in 1988 when ASD changed its name, the Applications Solutions line of business oversees two of IBM's most strategic areas: industry-specific software and professional services.

Increasingly, according to Steve Mills, assistant general manager of finance and planning in Programming Systems, IBM will combine basic software building blocks such as AD/Cycle and Officevision with professional services and industry-specific software.

But this task will not be easy. "[Applications Solutions unit head Bernard] Puckett's got the toughest job in IBM," said analyst Bob Djurdjevic, president of Annex Research in Phoenix. "He's got to reposition the company from a stovepipe mentality of products to one that crosses industry and geographic boundaries." The Applications Solutions unit, with about 30,000 employees worldwide, including those in ASD, is responsible for much of IBM's nonsystems software, including personal computer software.

Applications Solutions' industry groups develop and acquire niche software in vertical market sectors. Its transportation group, for example, teamed up with US Air to develop the Airline Application Development System.

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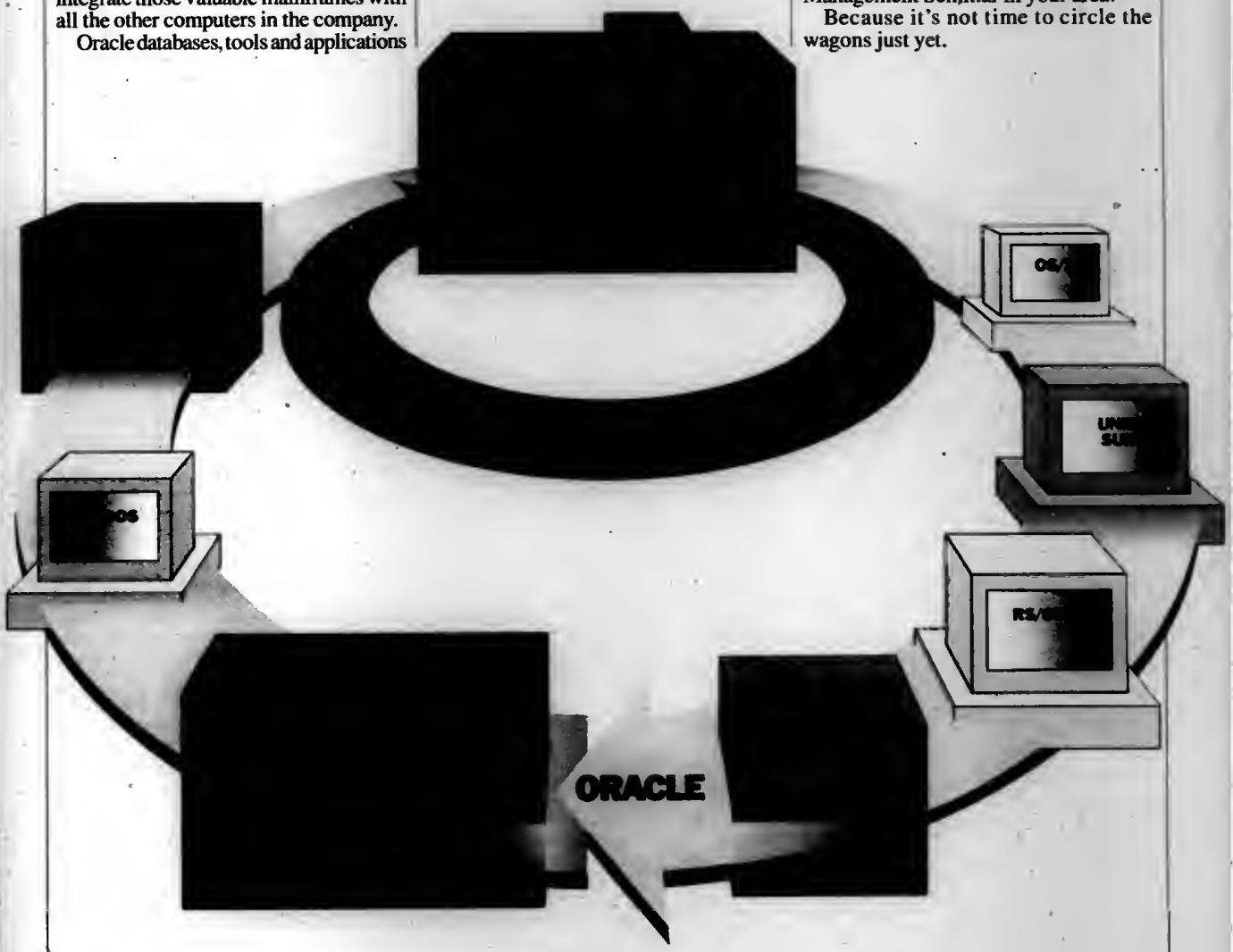

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IBM vows commitment to Displaywrite

BY CAROL HILDEBRAND
CW STAFF

WHITE PLAINS, N.Y. — With the announcement of enhancements to Displaywrite, IBM reiterated last week that its workhorse word processing package has a long way to go before it heads for the glue factory.

Reports that the package was going to be replaced by Signature, a graphical word processing family that is being developed by IBM and Xyquest, Inc. [CW, March 11], "aren't really true," said Frank Patrini, development manager for Displaywrite. "Signature is going to be concurrent to Displaywrite. We have many Displaywrite customers out there, and we are going to support them," he added.

Displaywrite 5 Modification 3 features several functions that are aimed at increasing ease of use, such as enhanced printer and laptop support, as well as a reduction in the amount of random-access memory necessary to install the package, Patrini said.

"Obviously, the focus at IBM is off of Displaywrite," said Mary Conti Loffredo, an analyst at Framingham, Mass.-based research firm International Data Corp. "But they are remaining true to their promise that they will not abandon their Displaywrite people."

Best migration path

Tom Fornoff, manager of editor marketing at IBM's Desktop Software business unit, said when Signature is fully developed, it will be the best migration path to graphical word processing. "We think that when the product comes out, a lot of them will [migrate]."

Analysts agreed that Displaywrite will not be given an unceremonious dumping. "Signature is clearly the desktop direction, but I believe that they'll incent the users into moving" rather than withdrawing support for Displaywrite, said Mike Anderson, an analyst at Gartner Group, Inc. in Stamford, Conn.

Still, some users are not waiting around for Signature to arrive.

Todd Sherman, data processing manager at Laerdal Medical Corp. in Armonk, N.Y., said he is currently looking at other packages, notably Ami Professional, which was developed by Samna Corp. and is now marketed by Lotus Development Corp.

"Signature? I don't know. I'm contemplating other standards right now, so I don't know where I'll be by the time they announce all that," Sherman said.

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Michael L. Sullivan-Trainor, Senior Editor, Computerworld, in the March 25, 1991 issue

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Prime unveils image product

BY SALLY CUSACK
CW STAFF

NATICK, Mass. — Prime Computer, Inc. last week dipped its toe into the image processing market, announcing an imaging product for customers using Prime 50 series minicomputers for commercial business applications.

Called Image Way, the software is integrated with Prime Information, Prime's Pick-like database software system.

A typical configuration is a Prime 50 series computer, a Prime EXL Unix-based system for server functions, an Intel Corp. 80386-based personal computer, a scanner, write-once read-many (WORM) optical storage technology, an optical character recognition station and a fax machine.

Daisy-chained jukeboxes

According to Peter DiToro, senior product marketing manager, the 12-in. WORM technology will offer 6.5G bytes per platter, with a maximum of 50 platters per jukebox. As many as seven jukeboxes may be daisy chained together on the system.

"This allows Prime to leverage their existing applications while automating new ones," said Scott McCready, director of the image management technology program at IDC/Avante Technology, Inc., a Framingham, Mass.-based research and consulting firm.

McCready noted that the vendor was prudent in not trying to be "everything to everyone" in the imaging arena.

The installed base of Prime Information users is estimated at 6,000 worldwide, and Image Way is targeting the top two-thirds of that number.

The software was developed under an OEM agreement with Plexus Software, Inc.

The system has been installed at the U.S. Department of State and the state of Colorado, and it will go into production mode at the University of Southern California at Los Angeles on June 1.

Pricing for an entry-level system begins at $170,000. A complete system configuration can range in price from $600,000 to $1 million, depending on storage options and number of seats.

Image Way is slated to be available for general shipment within six weeks.

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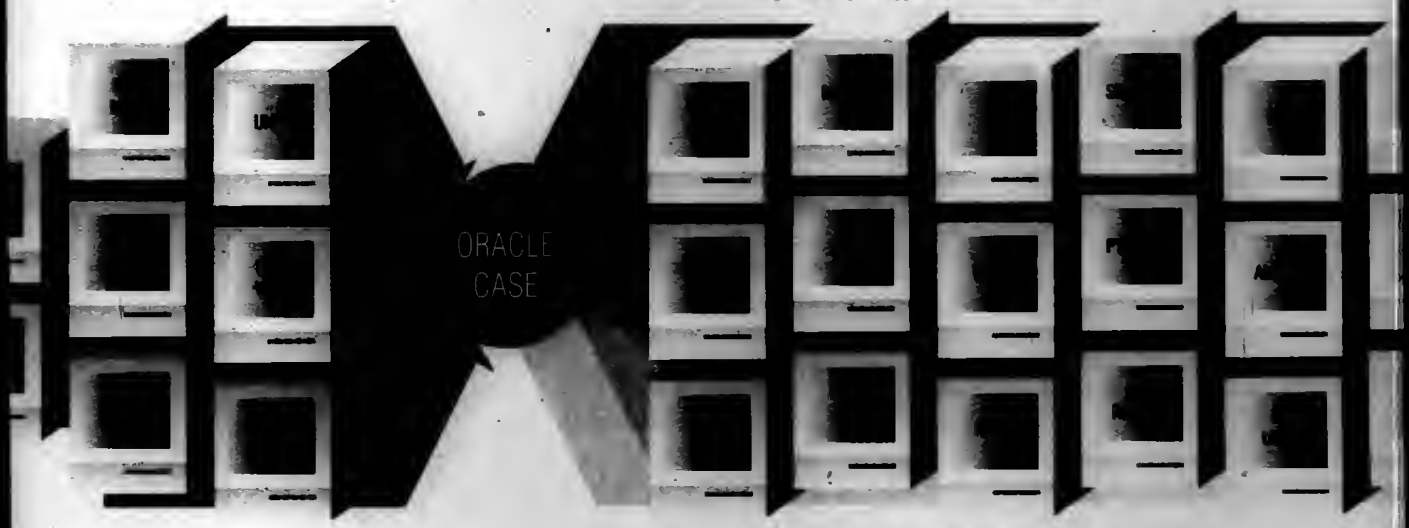

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DB2 not making PC leap

BY ROSEMARY HAMILTON
CW STAFF

SAN FRANCISCO — Distributed database may have been the theme of this year's International DB2 User Group (IDUG) conference held here last week, but users are still taking the slow road to IBM's version of this environment.

IBM is mapping out an enterprisewide strategy using its Distributed Relational Database Architecture, and some distributed features have been available for the mainframe relational database system since late 1989. Yet many users are still in the planning stage for distributed DB2, and several users seem more interested in connecting DB2 to the desktop. Because IBM has not yet announced this function, users are making do with basic downloading techniques to bring DB2 data to the low-end systems.

In general, users seem satisfied with IBM's delivery of mainframe distributed functions, which have trickled out since the late 1980s. However, some users also said they would like to finally be given a shipment date for the OS/2 Extended Edition link to DB2.

This would provide direct access to DB2 from the Database Manager under OS/2.

"I'm really disappointed about OS/2," said Kenneth Paris, a consultant at Forecross Corp. here and president-elect of IDUG. "That would start to solve problems, like users not having to keep retrieving data from the mainframe."

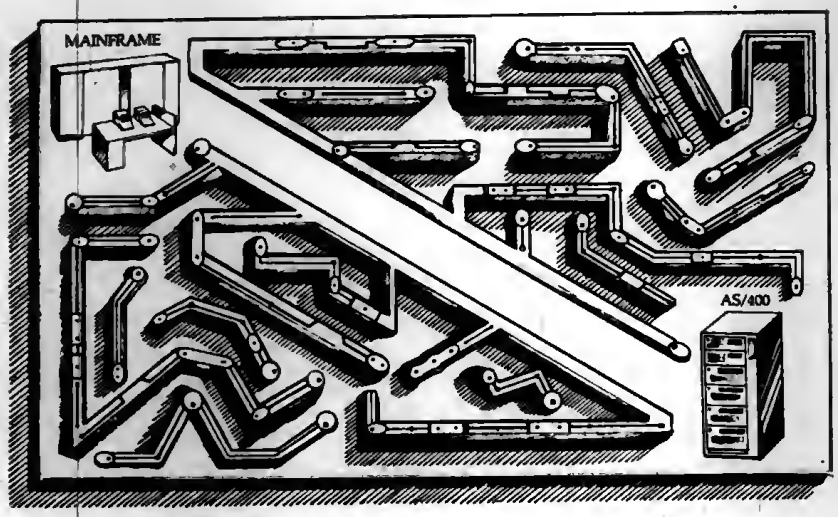
In response, an IBM spokesman last week confirmed the company is still on schedule to make an OS/2-to-DB2 announcement by year's end.

In the meantime, some users are looking for other solutions or are simply downloading information to use DB2 data on the desktop.

Paul Dufford, a database administrator at Baldor Electric Co. in Fort Smith, Ark., said the company's accounting department has been downloading DB2 data to a network of Personal System/2s. "They use just OS/2, DB2 and [IBM's] Query Management Facility," he said.

Ronald Schinker, a database administrator at Kimberly-Clark Corp. in Neenah, Wis., said his department is currently looking for a tool to help download point-of-sale data from DB2 to perform what-if analysis on PS/2s.

Since the late 1980s, IBM has provided distributed functions for SQL/DS and DB2 databases to communicate in a like-to-like environment. Late last year, IBM said it would announce an availability date for a DB2-to-SQL/DS link in late 1991. At that time, it indicated it would make an OS/2-to-DB2 announcement in that time frame as well.



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IBM sketches future plans

IBM last week provided a peek into DB2's future to approximately 1,600 International DB2 User Group attendees by sketching out key investment areas and plans for the next five years.

In a keynote address, Don Haderle, an IBM fellow and DB2 architect, said IBM will invest most of its DB2 development dollars into the five areas that users have indicated are high priorities. Haderle offered the following breakdown of investment dollars: performance, 25% to 30%; availability, 25%; distribution, 10% to 12%; application functions, 10% to 12%; and systems integration, 8%.

A key area of performance is DB2's transactions-per-second-rate, which the company has beefed up with each release. While DB2 was measured at 30 trans./sec. in 1984, Haderle said IBM is projecting that DB2 will run at 570 trans./sec. on a top-of-the-line Enterprise System/9000 Model 900 in 1991.

For improved data availability, from a data and applications view as well as a systems view, IBM is "committed to record-level locking," Haderle said. "We are doing that with OS/2 Extended Edition, and we are hoping to roll this into DB2."

Just in case . . .

For planned outages, IBM is focusing on partitioning technology that would allow users to take down portions of the database for maintenance while the remaining portion remains on-line. For unplanned outages, IBM has a project under way that would allow users to maintain a current, or "hot," version of the database off-site.

Haderle said users can expect the overall cost of running DB2 to fall as IBM moves to more of a processor complex environment. However, Haderle suggested that the complex will be made up of microprocessor-based systems.

"In order to get a different price/performance platform, we have to get on microprocessor technology," he said. "The energy will be on getting us to a different platform, a 370 instruction set, which is lower in price," Haderle continued. "It will reduce the cost by moving to a different configuration of the 370 architecture. If we look to the mid-1990s, there is the capacity for 600 MIPS to 6,000 MIPS under one cover."

ROSEMARY HAMILTON

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Calling

FROM PAGE 1

resolution of certain regulatory and technical obstacles to widespread deployment of local call identification services, according to Steve Sazegari, an analyst at Dataquest, Inc.

Once this happens, ANI installations will grow at a rate of 30% to 40% per year, the San Jose, Calif., research firm predicted.

The ANI services offered today by long-distance carriers deliver the general business number of each incoming call. A growing roster of corporations reported that they have realized significant boosts in service agent productivity and customer satisfaction by matching that number with a customer's account file and delivering key information to the agent's desk.

American Express Travel Related Services, one of the earliest users of AT&T's Info 2 ANI service, reported a 16% decrease in the average length of customer service calls in a pilot test. Bausch & Lomb has boosted customer satisfaction by recording the telephone number of customers who hang up before they reach an operator, so they can be called later.

However, not all individuals welcome the idea that a simple complaint or information call can put their telephone number in the hands of a business — particularly because those numbers can then be used in future telemarketing efforts.

Long-distance ANI services have avoided regulatory challenges partly because they do not fall under one Public Utility Commission's (PUC) jurisdiction and partly because they are offered in conjunction with 800 numbers — business services offered free to the caller.

However, the majority of recent local carriers' tariff proposals for caller ID — the local carriers' version of ANI — have run up against PUCs' caller privacy concerns (see story at right), discouraging potential users.

Mellon Bank Corp., for example, is still waiting for Pennsylvania courts to decide whether call ID is unconstitutional. The bank recently tried to implement AT&T's Info 2 ANI service, only to be told by Bell of Pennsylvania that the carrier was "legally prohibited" from delivering such a service, said Wayne Clifton, Mellon's telecommunications vice president.

"ANI is typically outside of PUCs' jurisdiction if AT&T passes it directly to your [private branch exchange] switch, but AT&T has to pass ANI through Bell of Pennsylvania's switch to our Centrex service," Clifton said.

Mellon also wants both local and long-distance call ID services, Clifton said. "Doing half a system seemed awkward." Therefore, the bank is holding off on call ID plans and is watching legal developments.

More requirements

Even with regulatory approval, many local carriers still have not deployed the ISDN and Signaling System 7 technology they need to provide business-oriented call ID services. Local carriers need Signaling System 7 to pass call ID information among their own central offices and to long-distance carriers.

While ISDN is not a prerequisite for call ID services, carrier spokesmen agreed that large call centers with a lot of incoming traffic can suffer from a slowdown in handling calls without ISDN's out-of-band signaling to carry the call ID data. For companies that are using call ID to improve customer service, this is obviously unacceptable.

Making the call on call ID

Caller identification debates are being initiated by a growing number of state PUCs. Proposals for local call ID services in Florida, Oregon and New York, among other states, have been put on hold at least temporarily while the commissions and local carriers debate how such services will be provided.

The most likely outcome for most of these debates is that the PUC will permit caller ID, with the proviso that local carriers provide users with the option of blocking the information from being sent, according to Henry Levine, a partner at the Washington D.C., law firm Morrison & Foerster.

Blocking potentially limits the number of incoming calls that have the ID information.

"It could kill the whole thing," said Thomas Calabrese, assistant director at The Travelers Corp.'s telecommunications division. "Too many states turning this thing off would hold back a good technology that would help us and our clients."

However, the likelihood that some percentage of calls will be blocked should not worry businesses unduly, Levine said. "You can cost-justify the service as soon as you get a reasonable yield" of call IDs coming through, he added.

Call ID advocates are hoping that regulatory bodies will keep their hands off business services on the grounds that mutual identification is an assumed basis for business dealings. So far, no one has challenged the right of long-distance carriers to offer ANI over business 800 numbers.

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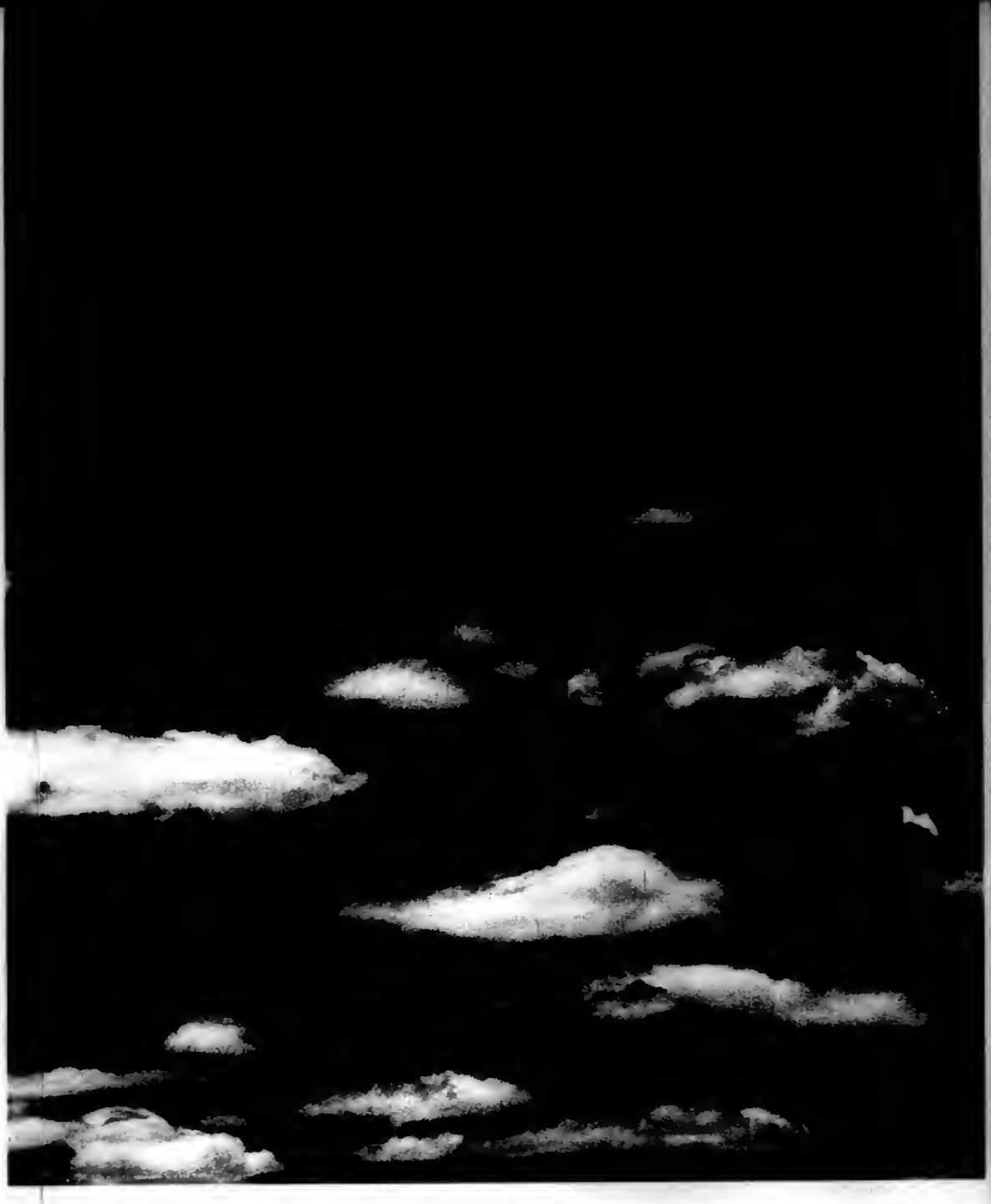

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TECH TALK

Cashing in on crystals

■ A new experimental technique devised by scientists at Bell Communications Research, Inc. has resulted in a practical way to monitor and control the growth of compound semiconductor crystal alloys and structures. The finding has allowed Bellcore researchers to produce aluminum gallium arsenide crystals that are compositionally 10 times more precise than any yet reported. Controlled crystal growth significantly increases a manufacturer's ability to mass-produce compound semiconductor devices at lower cost.

Multimaterial microchip

■ Researchers at Texas Instruments, Inc. have developed and demonstrated an optoelectronic integrated circuit that is reportedly the most advanced multimaterial chip of its type. TI's device is the first to combine silicon complementary metal oxide semiconductor logic circuitry with an array of eight gallium arsenide infrared light-emitting diodes. The device has potential use in optical computing devices, in which light and glass fibers replace the electrons and copper wire that now interconnect chips. One optical interconnect could replace as many as 32 of the pins that conventional chips use to transmit and receive information.

Sorting barrier broken

■ Two computer theory scientists have developed an algorithm that debunks conventional wisdom that there is a limit to how fast a computer can sort. The algorithm, devised by Michael Fredman of the University of California at San Diego and Dan Willard of the State University of New York at Albany, could allow surprisingly fast sorting of huge databases. The scientists use a new method of organizing data that allows a computer to compare one number against many others during a single computational step. Conventional methods can compare only two numbers at a time.

Graphical face on supercomputing

Cornell's Theory Center builds icon-oriented environment for scientific computing

BY JAMES DALY
CW STAFF

Imagine maneuvering through the dense information thicket of a supercomputer with the ease of calling up applications on Apple Computer, Inc.'s Macintosh personal computer. Then consider the cheer that would arise if the supercomputer's arcane Unix commands were replaced with screen icons as easy to use as those found on Microsoft Corp.'s Windows 3.0 graphical interface.

Sound farfetched? The folks at Cornell University's Theory Center don't think so.

In the next few weeks, the center will begin shipping beta versions of the Scientist's Workbench, a graphical environment for scientific computing that swaps complex Unix command strings with the icon-laden screen appearance of many PCs.

By clearing away the chore of programming complex scientific problems, the Workbench promises to up productivity and enlarge the range of problems that can be attacked by the supercomputer. "We spend more time programming than anything else, and that's expected to get worse in the next few years as we get into more advanced architectures," said Charlie Bender, director of the Ohio Supercomputer Center in Columbus. "Anything that could cut these programming tasks would be very desirable."

Research scientist Tom Rounds began designing the Workbench in 1988 when he noticed that the center's scientists spent more time struggling with the operating system than they did on research. Writing the code to simulate complex scientific problems is one of the most challenging and time-consuming aspects of supercomputer research.

Christoph Albersdorfer

Rounds wanted a way to eliminate repetitive programming and allow his fellow scientists to concentrate on solving problems. The Workbench runs on a Unix system that supports the X Window System Transmission Control Protocol/Internet Protocol and the Open Software Foundation's Motif style guide, said senior manager Donna Bergmark, who is now in charge of Workbench development. At Cornell, the Workbench serves as an interface to a pair of IBM 3090s and several Hypercubes from Intel Corp.

Because researchers are often highly individualistic, the Workbench can be graphically customized to suit independent preferences, and it allows for both graphics and text-driven commands. The environment also incorporates support for distributed processing, allowing researchers to divide their computing problems into components that can be executed simultaneously.

The Workbench also clears away desk clutter. "In the past when you were accessing a wide variety of machines like supercomputers and workstations, you had to have several terminals on your desk," Bergmark said. "It's convenient to have a unified interface that connects them all."

Programming for the Workbench is simplified through a variety of support tools. To parallel the flow of ideas, the Workbench divides support tools into five categories: programming, applications, documentation, communications and utilities. Each of these categories appears as a submenu in the Workbench organizer, and each can contain whatever options and applications the user chooses.

GAO calls for 'smart highway' research

BY MITCH BETTS
CW STAFF

The professional skeptics at the U.S. General Accounting Office (GAO), the congressional watchdog agency known for its scathing attacks on wasteful federal spending, have discovered a technology program that needs more money, not less.

After a thorough study, the GAO recently called for an aggressive research and testing program on Intelligent Vehicle and Highway Systems (IVHS), popularly known as "smart highways." They use road sensors, traffic-management computers and in-car terminals to guide drivers around traffic snarls and keep the traffic flowing [CW, March 5, 1990].

What impressed the GAO auditors was preliminary evidence that computerized traffic management can sharply reduce traffic congestion, accidents, fuel consumption and pollution. For example, a modest system of computer-controlled traffic signals used in Los Angeles during the 1984 Olympics cut travel time by 13% and reduced vehicle stops by 35%.

Even more dramatic benefits are possible, in theory, from fully automated freeways that use computers to actually control dense packs of cars — maybe electric cars — at high speeds.

But the ever-cautious GAO stressed that a major research and testing program is needed through 1996 to reduce the uncertainties and verify the grand claims for IVHS, before launching a full-scale deployment that may cost $34 billion during the next 20 years.

That heavy-duty price tag and the need for technical compatibility standards for the system components are the major barriers to implementation of IVHS, the study concluded. There are also nagging questions about whether drivers will be distracted by in-vehicle devices and who is liable for any accidents on an automated highway.

Nevertheless, the generally positive GAO report is being used by Sen. Frank R. Lautenberg (D-N.J.), chairman of the subcommittee that handles transportation appropriations, in his campaign to increase funding for IVHS programs at the U.S. Department of Transportation.

Lautenberg's IVHS proposal would authorize $250 million per year for the next five years. Among the technologies the measure would fund are the following:

- Development of in-car terminals that could provide electronic maps and guidance to drivers.
- Real-time messages that alert drivers to tie-ups and provide alternate routes.
- Computer-synchronized traffic signals.
- Electronic toll collection to eliminate stopping at toll booths.

"IVHS technologies will help break up traffic jams, keep cars moving and reduce auto emissions. We need to make it an integral part of our transportation programs," Lautenberg said.

The White House Office of Science and Technology Policy, too, has endorsed IVHS as one of 22 critical technologies for U.S. economic competitiveness.

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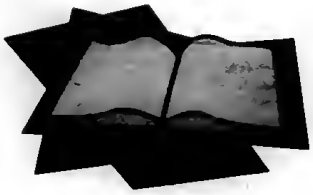

IDC Study on UNIX OLTP
UNIX On-Line Transaction Processing at Multi-User UNIX Sites (January 1991) states that some 47.4% of sites running commercial applications on multi-user UNIX systems are running OLTP. The study reports that Informix is in use at more sites than any other DBMS for UNIX OLTP applications.

About the TPC
The Transaction Processing Performance Council (TPC) was founded in 1988 to define transaction processing benchmarks and to provide performance data to the industry. Today, 40 hardware and software vendors, including AT&T, Bull, Sybase, Data General, DEC, ASK/Ingres, Fujitsu, IBM, Informix, Hewlett-Packard, NCR, Olivetti, Oracle, Pyramid, Sequent, Siemens, Sun, and Unisys are members.

Within the past five months, *every one* of these companies selected and used the INFORMIX-OnLine database server to demonstrate to their customers the power of their latest UNIX systems. No other UNIX database product has been this extensively benchmarked—because nothing shows performance like OnLine.

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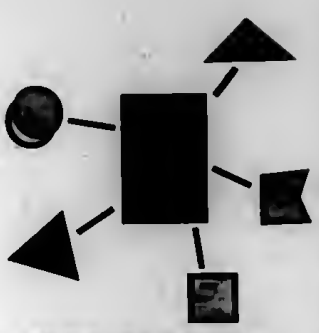

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The cost crunch.

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EDITORIAL

IBM's test of time

It was an overflow crowd at Comdex last week that listened to the IS director of Borg-Warner tell his company's tale of switching from an IBM mainframe to a Microsoft Windows-based PC network.

According to Vincent Chrisman, his initial investment for the PC network was $72,000. That, he said, compared very favorably to the $300,000 his shop spent annually on its mainframe, most of that in software maintenance and support.

If there is a crux to IBM's software dilemma, this example pretty much states it. IBM derives about 70% of its software dollars from systems software revenue, most of that from large-systems licenses. With IS sites around the world trying to stem the growth of mainframes while porting applications to cheaper platforms and with the general trend toward a consolidation of data centers (meaning fewer software licenses), IBM's software cash cow just isn't producing like it once did.

That is the conclusion reached at the end of our three-part series in today's issue: While IBM's software future is unclear and few observers feel IBM's software strategy is in long-term jeopardy, time is not on IBM's side.

This analysis must be kept in perspective. With more than $10 billion in software revenue annually, IBM rakes in nearly six times the software dollars of the largest independent software maker, Microsoft. But that $10 billion represents only about 20% of IBM's total revenue, and that's nowhere near the revenue mix IBM had hoped to reach by the mid-1990s.

A linchpin in the company's software strategy should have been a carefully crafted articulation of the components of Systems Application Architecture and how strategies like AD/Cycle would unfold in the 1990s. But as the series points out, some big users formerly locked into IBM's account control mechanisms have pried themselves loose — partly because of impatience with the evolution of the strategy and partly because they didn't like what they saw.

Ultimately, too much of IBM's software strategy remains entwined in a world of proprietary hardware, which is not the direction the computing world is heading. Its movement into Unix and open systems in general, notwithstanding its recent workstation success, is proof of this.

There was a time one generation ago when IBM's standard was the de facto computing standard, as was the case with Systems Network Architecture.

Today's reality was best expressed by an IS director in the first installment of our series: "Five years ago when IBM did something, it froze a lot of people. Not anymore . . . they don't call the shots."

IBM will succeed in software in the 1990s only if the corporate culture can truly give up the ghost of casting itself primarily as a proprietary hardware company, around which everything else revolves. That's the biggest "if" for today's biggest software firm.

LETTERS TO THE EDITOR

The Pick search

Ms. Savage got a few of her facts right but inexplicably directed her summation to a conclusion that I find both mystifying and incorrect in "Pick market decision time" [CW, April 22].

How in the world can she conclude that there is "not much of a future market on which vendors can hang their profits and not much of a future applications growth path for users"? Unix applications are few and far between. Unix itself suffers from a serious lack of standards. Pick in itself is a standard.

Over the last few years, Pick Systems and most of the Pick licensees have ported their code to run co-residently with Unix. This gives users the best of both worlds. In Pick, you get an outstanding database management system along with a robust array of application packages. In Unix, you get a robust environment capable of supporting every bell and whistle users could want.

The bottom line is that these two apparently disparate environments complement each other nicely. Both systems tend to accommodate each other's inadequacies.

Having Pick means that your investment is protected. You can start with Pick on a little PC and move it to giant mainframes such as a Sequoia with virtually no modification to the code. Meanwhile, the 2.5 million daily users keep plugging on their Pick-based applications, chuckling under their breath at the ease with which [the programs] can be maintained while the rest of the world continues to search for the "standard."

Jonathan E. Sisk
JES + Associates, Inc.
Irvine, Calif.

Solutions are key

The commentary on Pick [CW, April 22] displays a one-dimensional, narrow-minded view that is sadly prevalent in the computer industry. She seems incredulous that anyone would be silly enough to opt for business solutions that do not fit the mold of mainstream data processing — DOS, Unix, OS/2, MVS — even though they may be the best solutions available. Ms. Savage should reread her own column to find the answer to why users and vendors continue to turn to Pick for solutions. The key word is applications.

Ms. Savage is correct in asserting that not many college graduates are leaving with Pick experience. This is an even stronger testimonial to the abilities of the Pick DBMS to provide business solutions. While colleges are churning out Unix-trained computer scientists and engineers, it is Pick developers who are delivering proven solutions to the marketplace.

Systems vendors such as Data General, Hewlett-Packard, Prime, Sequent and others are recognizing that the wide array of Pick business solutions will attract new users to Unix. Unix, as the operating system, will run your computers. Pick, as the DBMS, will help you run your business.

Bill Leonard
Ridgewood, N.J.

Intangibles count

Melvin Niska's article, "Knowing too much but too little" [CW, April 22], points out some major problems in the information systems career field. As Mr. Niska illustrated, most companies want ready-trained employees whose resumes read like the prospective employer's software inventory, but little if any credit is given for motivation, intelligence, aptitude and desire.

I frequently see position vacancies languish six to 12 months waiting for the perfect candidate, who, when finally offered the job, either turns it down because they've done it before or accepts and then quits after a brief stay, only because things weren't going their way.

The real tragedy of all this is that Mr. Niska and many like him played ball by the rules during their careers and were rewarded with promotions, only to find that no one believes that they can perform technical duties again. So their ultimate reward becomes extended unemployment and pressure to leave a career field to which they have devoted much of their lives.

Employee loyalty can be built up even in these uncertain times if top management would accept the inherent intelligence of people like Mr. Niska and retrain them; I have seen it happen.

The "more mature" players, like Mr. Niska, will become more attractive, and they will either price themselves accordingly or move on to self-employment.

Edward J. Pospesil Jr.
Buxbaum/Pospesil, Inc.
Woodbridge, Conn.

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If you like pointless exercises . . .

You'll love the Commerce Department's proposed 'super' definition

GORDON BELL

The U.S. Department of Commerce's Bureau of Export Administration might want to rename itself either the Bureau of Export Assistance or the Bureau of Export Aggravation, just to let everyone know where it stands.

In November 1990, the bureau was asked by President Bush "to initiate international negotiations by Jan. 1, 1991, to establish a new supercomputer supplier regime." For some reason, the bureau has taken this request as a mandate to attempt a brand-new definition of "supercomputer," which potentially includes many more computers, such as workstations.

What the bureau is worried about is getting a new, single-value metric to measure supercomputer performance.

The current metric, processor data rate (PDR), is actually OK, if one is fixed on getting just *one* number that signifies the ability to do 64-bit arithmetic computation. A footnote is needed, however, that says that a machine actually has to be capable of delivering the PDR on a test program that the formula gives. On the other hand, the proposed new metric, composite theoretical performance (CTP), is a bureaucrat's delight and was probably cooked up by a former high-level Internal Revenue Service form and instruction designer who wanted to harass the computer industry.

In no instance could a machine ever deliver the measure that CTP implies, because it has no physical significance and concerns itself with theoretical or "thing" operations per second, a "thing" being an architecture constructed of computing elements designed by unidentified bureaucrats.

I won't go into the proposed CTP, except to say that logical, integer and floating-point operations per second (FLOPS) rates, word length and some random constants and I/O data rates all contribute a theoretical or "thing" operation to CTP. Since CTP bears no relationship to a computer or its performance on any program or work load, a real computer is rated pessimistically or optimistically at random.

Nicolas Aznic

At least the old metric, PDR, almost equated to the manufacturers' peak or advertised speed. It also had the advantage of being able to be verified experimentally.

Adopting the CTP metric might assure full employment in Washington, D.C., but it would inevitably decrease trade competitiveness and industry productivity (unless we start measuring productivity by the fractional CTPs that a company can calculate and government servants can check each year). More time will be lost at even more firms that should be working on computers.

The bureau is concerned about computers in the 200 to 1,500 millions of "thing" operations per second (MTOPS) range, which is near that of powerful workstations and microprocessors. Further, using its method of computing, a "composite theoretical thing" that performs logical operations rapidly on 16-bit data can have the same power as a computer that does 64-bit floating-point arithmetic. What this means is that the bureau can draw more firms into its web.

This brings up yet another problem with trying to inhibit the export of traditional supercomputers — the harder we try, the more our economic and military competitors are encouraged to build their own supercomputers or supercomputer substitutes. This is easier for them to do now, since it is becoming increasingly true that "FLOPS is FLOPS" no matter if you buy them as a supercomputer with a few GFLOPS or as boxes of 50 to 100 MFLOPS parts, which fall below the CTP control line.

A new single-value metric just doesn't feel right to characterise all the situations one could envision a bureaucrat might want to control.

What would I do?

Computer and chip manufacturers know performance metrics such as Linpacks, Livermore's Kernels and Specmarks. The bureau should use one or two of these as control thresholds, depending on what it is trying to control (e.g., weapons calculation, real time control, decryption). I would also ask the suppliers to propose a time-varying metric, given some stated objectives from the government of what it is trying to control.

These actions would free industry to build and sell competitive machines. The process might also teach the Commerce Department and the industry to work together, while a U.S. supercomputing industry still exists.

Bell is chief scientist at Stardent Computer, Inc. and co-author of *High-Tech Ventures: The Guide to Entrepreneurial Success.*

Product quality is only half the real battle

JEFFREY M. KAPLAN

Product quality and customer satisfaction have become the battle cries of companies large and small throughout the U.S. Improving our competitive position in the world through better products and services has been a major issue since the latter part of the 1980s and has gained even greater prominence since the establishment of the Malcolm Baldrige National Quality Award.

Few industries have experienced as dramatic a shift toward customer-driven marketing as the information technology industry. Yet it remains a question whether all of this attention will translate into tangible benefits for customers who are grappling with the growing complexities of how to effectively use their information technology.

There is little doubt that product reliability in the industry is constantly increasing, but that has not necessarily led to greater customer satisfaction. Many customers continue to be frustrated by their inability to fully use available technology.

While it is hard to complain about vendors' sincere efforts to improve, too often they concentrate their efforts on products and ignore the need for service improvement.

It is easy to understand how this can happen. Product refinements or production modifications can produce measurable improvements in product quality. On the other hand, even the administrators of the Baldrige Award admit they have a difficult time measuring quality improvements in services. Yet, this is "where the rubber meets the road." Customers need professional value-added services such as systems planning and design, project management, systems integration and operations management to help them better deploy the technology at their disposal.

More vendors are venturing down this path and attempting to compete on the strength of their services. Yet many are still only giving lip service to this area. Therefore, separating those vendors with quality support from those who are unlikely to fulfill their promises is an important challenge for customers.

Measuring the quality of services is always a difficult task, and this is particularly true of professional services. The typical metrics of response and resolution time do not apply, and vendors must be prepared to meet or exceed more subjective expectations.

Despite the problems that exist in measuring the quality of support services, customers have an opportunity to take advantage of the competition that the Baldrige Award has created. Let the vendors who proclaim they are competing for that award be the first to tell you in detail how they will assure you that you'll be happy with their products *and* their services.

Kaplan is the director of service industry research programs at Ledgeway/Dataquest in Lexington, Mass.

No bones about it: We need software archaeologists

READER'S PLATFORM

RICHARD FLEMING

The other day I found myself tracing through the files of my predecessors, searching for the source code for a module everyone assured me was "critical." My sense of dread deepened as I slowly scanned old README files that referred to data sets archived nine years ago on a system that left our site in 1987.

Rummaging through an abandoned office, I hit pay dirt — the old blue book. Somehow it had survived the countless housecleanings. Stuck in the back was a list of source tapes. I was on cloud nine. I sat down at my desk and issued a retrieval request from our bomb-proof, 600-ft.-deep data storage vault.

The tapes arrived a few days later, and I reverently carried them to our library and loaded them onto a drive, hoping that the bits would still retain their magnetism, that the drive would be the right type, that the computer hadn't been an RCA Spectra machine, that the . . . Yahoo! I was in luck. The tape jerked, spun and unloaded. Holding my breath, I edited the file and looked at . . . what was that stuff anyway? Obviously, a computer language, but which one?

I printed the file and went around plaintively asking my coworkers, "Seen anything like this anywhere?" All I got for my efforts were bemused stares and a few guesses. "Looks like SAS to me." "No, I think it's Easytrieve." "Could it be RAMIS?" Dejected, I gave up the idea of an easy fix and spent the next few weeks recoding the program into C.

Yes, I know, this would never happen in your well-run shop, and I'm the Queen of Sheba!

What I propose is a new specialty for our profession. We need people trained in the obscure dialects of ancient computer languages. I can see the ad now: "Wanted — Software archaeologist able to read/write Honeywell Autocoder and understand Easytrieve. Familiar with 6502 Assembler. Able to maintain JES3 1.31 in a non-SMP environment. Excellent pay, stable working conditions. Call (800) EAT-DUST."

The need for training in software archaeology will increase as languages and operating systems change. It is a profession certainly not limited to IBM's world. Any bets on finding someone able to recode an AWK program 10 years from now?

Oh, by the way, I finally found a textbook showing a sample of the language my module was written in — Snobol. I should have known.

Fleming is an IS professional from Point Pleasant Beach, N.J.

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SOFT NOTES

Putnam honored

The Putnam Companies, an investment services firm in Quincy, Mass., was recently awarded The Second Annual BIS Strategic Decisions' Imaging Excellence Award. Presented at the 1991 Association for Information and Image Management conference and exposition in Washington, D.C., the award recognized Putnam's strategic use of imaging in check/item processing, mortgage loan origination, claims processing, engineering drawing management and customer service applications. Finalists included Blue Shield of California, the U.S. Department of State, and Northwest Airlines.

Andersen Consulting of Chicago and Boston-based **Multitrak Software Development Corp.** have signed an OEM pact to market distributed, information systemswide project control and resource management solutions. Products from both companies will be bridged to deliver an integrated set of computer-aided software engineering, methodology and management control software tools.

Open systems finds a place in users' hearts

BY TIM GRANTHAM
SPECIAL TO CW

TORONTO — In a 1989 study, 70% of the users surveyed could not articulate the benefits of open systems and almost none could quantify the value of such benefits.

Despite those findings by the Boston-based DMR Group, Inc., however, "more money has been invested in Unix-based research and development than in any other operating environment" since 1989, said George Shaffner, chief operating officer at X/Open Consortium Ltd.

The X/Open Consortium, a not-for-profit open systems market development organization in the UK, has developed the X/Open Portability Guide (XPG) for systems software. Support for XPG has been announced for virtually every Unix-based system and for proprietary operating systems offered by Digital Equipment Corp. and International Computers Ltd.

In his recent keynote speech at the Open Systems '91 conference in Toronto, Shaffner painted a bleak picture of the future of the industry if vendors cannot supply the right open systems products. "CIOs and the committees on which they serve are far more conservative," he said, because of high conversion costs, high software maintenance costs and tighter budgets.

These chief information officers want the products they do buy to be based on standards and

Continued on page 34

FEATURE: MOVING TO THE AS/400

Dumping conversion headaches on the other guy

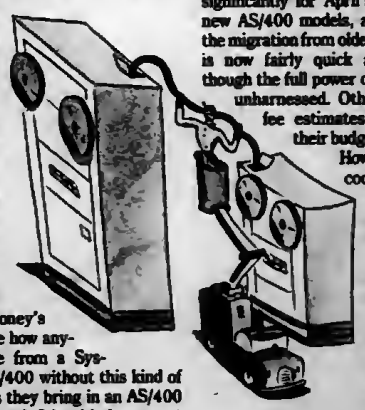
BY JOHN WEBSTER
SPECIAL TO CW

Buyers of IBM's Application System/400 generally get what they pay for when it comes to increases in speed, power and versatility. However, they also get the mixed blessing of a new operating system, which leads to some all-too-familiar choices. Should they dispose of all that useful software from the old machine? Or make it compatible somehow with the new architecture?

Although the ideal solution, many information systems managers say, is converting RPG-II or batch Cobol code to native AS/400 code, the task is usually monumental because of age-old code residing on the older systems, replete with patches and idiosyncrasies left by programmers over the life of an application.

Some firms elect to tackle the conversion in-house; others opt to farm the work out to an outside company specializing in such conversions, hoping to save time and trouble and retain current staff members in the process.

Companies providing conversion services generally have three common goals: providing AS/400 expertise that many of their customers lack because the platform is relatively new; enabling customers to retain their programming staff without needing to "clean house" for AS/400 specialists; and allowing customers to retain their extensive time and monetary investments in custom applications. For the user, the primary goal is saving time, problems and, in the end, money.



Robert Gentile, director of IS at Parade Publications, Inc. in New York, says his company is "getting [its] money's worth. I can't see how anyone can migrate from a System/36 to an AS/400 without this kind of assistance unless they bring in an AS/400 staff, but then what do I do with the current staff members who know the inner workings of the company? We didn't want to throw out System/36 people and get AS/400 people."

Not everyone has chosen to unload their conversion problems on an outside firm. IBM's conversion utilities were beefed up significantly for April's announcement of new AS/400 models, and some users say the migration from older midrange systems is now fairly quick and painless, even though the full power of the AS/400 is left unharnessed. Others cite conversion fee estimates that were out of their budget range.

However, the maze of code typically supporting aged mainframe and midrange systems is enough to cause even the most ambitious programmer to seek help. It was exactly that scenario that led Richard Canter, a senior systems analyst at Teachers'

To page 28

the totally automated office

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PROGRESS

The Usual Limits Don't Apply.

BK customers have it their way

ON SITE

BY MARYFRAN JOHNSON
CW STAFF

MIAMI — One million phone calls ago, Burger King Corp. still had a lot to learn about its customers — like how annoyed they got about that second trip to the counter for catsup. Or how much they resented a screwed-up order at the drive-up window.

The toll-free Burger King Consumer Response Line filled those information gaps.

Promoted with "Your comments count" slogans on tray liners, posters and carryout bags at all 5,600 Burger King restaurants nationwide, the project swiftly outgrew a personal computer and local-area network. Today, it runs on an IBM Application System/400 midrange system with 26 operators fielding calls 24 hours per day.

Whether it is a beef with the burgers or a complaint about the ketchup, Burger King wants to hear about it.

The giant fast-food retailer's experience reaches beyond the use of information technology to automate or increase productivity, however. It demonstrates how computers can be the catalyst for change.

"The Consumer Response Line has become an amazing communications tool for us," said Bonnie Tracy, Burger King's manager of consumer relations at its headquarters here. "We now have a much clearer indication of the areas to look for in spotting problems before they become serious or widespread."

The speed of the system "has enabled us to enhance customer service in ways previously not possible," Tracy added. Among the changes is employees now repeat each order back to the customer to catch any mistakes.

Unlike the time-consuming chore of answering a questionnaire or telephone interview, the response line, (800) YES-1800, has an immediacy about it that prompts an average of 4,000 customers per day to pick up the telephone and call.

When customers had to mail in their complaints, the average response time from Burger King was 68 weeks, Tracy said.

"Since we instituted the Consumer Response Line, the number of positive calls we receive has increased by more than 50%," she added. "Without the 800 number, it's unlikely that so many people would pick up the phone to congratulate us."

Each call is answered by operators who access the AS/400 from their display terminals, where they enter the caller's name and address along with any comments. Supporting the customized customer response software is IBM's Officevision/400 office automation package and the AS/400's built-in database.

An operator receiving a call about a Burger King in Detroit, for example, simply enters the letter D and every city beginning with that letter appears on the screen. A few keystrokes later, all the Burger Kings in Detroit are listed, and the operator can target the exact location where the customer complaint — or praise — originated.

The idea behind the Consumer Response Line was first tested in 1988 at 200 company restaurants, and the single-PC operation gradually grew by adding a few more machines and LANs. "It worked beautifully, and senior management was so impressed with the need and results of the 800 number, they decided to go with a full-scale, nationwide operation," Tracy said.

Shift in CASE use reported

BY SALLY CUSACK
CW STAFF

If your company is currently using computer-aided software engineering (CASE) technology, chances are good that it is making other moves, such as shifting from the traditional big-iron world of mainframe computers and dumb terminals.

A recent study conducted by International Data Corp. (IDC), a Framingham, Mass.-based market research firm, revealed that companies using CASE are moving off the mainframe and onto platforms at a measurably quicker rate than those working in non-CASE environments.

Currently, 40% of CASE users work in a mainframe terminal environment, while 59% of non-CASE users rely on mainframe-to-terminal computing.

By 1994, only 25% of CASE users will be working in a traditional mainframe/terminal environment, while 47% of non-CASE users will still be actively supporting the mainframe/terminal architecture, said Anthony C. Picardi, director of application development tools at IDC.

According to Picardi, in 1994, 35% of CASE users will function in a local-area network client/server environment, and 15% will have moved to a cooperative processing platform. The remaining percentage will most likely have opted for some type of stand-alone solution, he said.

By contrast, in three years, 20% of non-CASE users will have migrated to LAN-based client/server platforms, while 10% will have moved to cooperative processing technology.

"Clearly, CASE users are moving more quickly off the mainframe environment," said Picardi, adding that CASE users are more likely to take advantage of additional technologies.

There are several strategic factors affecting a CASE purchase, but surprisingly, software cost is not the primary motivator. According to the IDC study, the single highest priority for users is that CASE applications are compiled — not interpretive.

Easily optimized code and the ability to integrate and generate fourth-generation languages (4GL) ranked second and third, respectively.

The study was based on a survey of 225 sites divided equally between IBM mainframe and Digital Equipment Corp. VMS customers using the platforms as primary systems.

Whatever the CASE

According to the user survey conducted by IDC, the strategic factors affecting a CASE purchase are the following:

- CASE applications are compiled, not interpreted, and compiled code is easy to optimize.
- CASE applications support 4GL integration and generation.
- Tools are provided for support and development of methodology.
- Multiple database access for CASE applications.
- CASE tools can be implemented on multiple hardware platforms.
- Cost of software.

Verity's 3-year-old Topic goes distributed

BY JEAN S. BOZMAN
CW STAFF

MOUNTAIN VIEW, Calif. — Verity, Inc. has just extended its 3-year-old Topic text-retrieval system to distributed data networks, allowing users to combine multiple local-area network searches into a single network-wide search for documents. The latest release, Topic 3.0, which begins shipping June 1, is capable of merging queries across wide-area networks, the firm said last week.

In the current Topic 2.0 release, users must conduct individual Topic queries against multiple relational databases. Now such queries can be combined into single queries that go against multiple data sources through a new Topic Partition Server, said Bob Williams, Verity's vice president of marketing. "The Topic architecture has been extended to support an integrated LAN/WAN solution," he said. "That gives us concurrent processing on the LAN and queries that are redirected to other servers in the network."

Other new features include a Topic query language called Topiql, a SQL-gateway bridge that will fetch data directly from networked databases, support for major graphical user interfaces including Microsoft Corp.'s Windows 3.0 — and three levels of access to match interfaces with a user's programming skills.

Topic 3.0 server software is priced from $15,600 to $150,000, depending on the number of users and the number of supported databases. Topic desktop client software, available for IBM Personal Computers, Apple Computer, Inc. Macintoshes and Unix workstations, is priced at $795.

Verity has pursued an open systems strategy that allows users to run the text-retrieval system on more than 20 hardware platforms, industry analysts said. Many of Verity's competitors based systems on IBM mainframes. As a result, Verity is trying to capitalize on the current user movement toward downsizing mainframe applications — and toward open systems such as Unix.

"They're moving toward a full-fledged information-retrieval product," said Ann Palermo, director of office systems research at International Data Corp. in Framingham, Mass. "They're developing closer links to RDBMSs," she said, "and that means the numbers stored in a database can be brought together with the documents that are stored in Topic."

Cray Research flowers with May sales

BY ELLIS BOOKER
CW STAFF

EAGAN, Minn. — It has been a busy May for Cray Research, Inc., which announced sales of five of its supercomputers this month.

Cray Research computers range from $500,000 to $23 million in price, according to a company spokeswoman.

Three of the five sales were of Cray Research's Y-MP2E, an air- or liquid-cooled system the firm introduced last May. The Y-MP2E model costs between $2.2 million and $5.7 million.

Cray Research Chairman and Chief Executive Officer John Rollwagen emphasized the importance of the Y-MP2E earlier this year, telling stockholders he expected half of the systems delivered by Cray Research in 1991 to be the new model.

According to Gary Smaby, president of Minneapolis-based Smaby Group, Inc., Cray Research is "moving down its average system selling price." He said this was to be expected as Cray Research intensifies its defense against the likes of Convex Computer Corp.

Cray Research's May customers include the following:

- The Regional Computer Center at the University of Stuttgart in Germany, which installed its Y-MP2E — the first Y-MP2E in Europe — last month. The system will be used as a file server, sitting between high-performance workstations and large scientific visualization files generated on the university's existing Cray-2 supercomputer.
- Apple Computer, Inc. and the California Institute of Technology (Caltech), both of which replaced their older Cray Research X-MPs with Y-MP2Es. Apple will put its $4.6 million system on its Cupertino, Calif., campus in the fall; Caltech will use its system at the Jet Propulsion Laboratory in Pasadena, Calif.
- Pfizer, Inc. will install its Y-MP2E this month at its research laboratory in Groton, Conn. This is the first supercomputer for the pharmaceutical company and Cray Research's 100th customer installation of a Y-MP system.

Conversion

CONTINUED FROM PAGE 25

Insurance and Annuity Association/College Retirement Equity Foundation (TIAA/CREF), based in New York City, to look for help outside the company for an IBM 3090 mainframe-to-AS/400 migration. The company intends to move all of its applications from a mainframe architecture to an AS/400-Personal System/2.

The company's custom rate analysis application, written in batch mainframe Cobol, sets insurance rates for group life insurance and annuities. "It was homegrown 20 to 25 years ago, so there's a lot of spaghetti code — very fragile code. The thing had cobwebs on it. Rather than deal with intracorporate chargebacks, we picked and chose where to build new applications. In this case, we found that it needs re-engineering because it's not efficient code," Canter explains.

The combination of limited in-house resources and the work involved with the companywide migration drove TIAA/CREF to look to Conversion Services International, Inc. in Lyndhurst, N.J. The move proved to be a good one, Canter says: "They were very good at living up to their estimates and things that needed to be done."

Systems analysts at Sealand Service, Inc., an Elizabeth, N.J., shipping firm, experienced similar shorthandedness in its migration from System/36s to AS/400s. In the case of Sealand, not only was the System/36 RPG-II code old and unwieldy, but Sealand also lacked the AS/400 experience to convert it.

"The AS/400 is a fairly new machine, so there are not too many 400 experts on the market. We didn't have the expertise in-house, and the [conversion firm] could do it fast," says Paul Vanya, lead systems analyst at Sealand. Vanya looked to Financial Technologies, Inc. in Cedarhurst, N.Y., to convert Sealand's Inland Transportation System, which includes among its modules accounts payable, scheduling, transportation route planning, maintenance scheduling and barge and rail tracking. The program was originally written in RPG-II.

Why not use IBM's own conversion utilities, shipped with the AS/400? IBM does provide a set of utilities allowing a System/36 application to run on an AS/400, but the solution is not satisfactory to most users because it runs in System/36 emulation mode, which prevents the application from taking full advantage of the AS/400's speed and power. By converting to native code rather than running the old application in emulation mode, users realize the full performance advantage of the AS/400 over the System/36.

Officials at Georgia-Pacific Corp. in Atlanta wanted to boost the performance of an employee stock purchase application when the company began a migration to AS/400s. "We didn't want to take the application to the 400 in 36 mode because we didn't like the performance," says Ted Gardner, director of corporate applications services at the company.

To fully convert the application, which was originally written for the System/36, to AS/400 native code, Gardner enlisted the help of Computer Resources and Technology, Inc. in Waukesha, Wis. The software, written in RPG-II, keeps track of employees' shares purchased and payroll deductions and creates stock activity files for brokers.

Tap the power

Users emphasize tapping the full power of the AS/400. "We definitely have a much better piece of equipment with the AS/400," Gentile says. "We do a test where we run the converted program on a System/36, time it, run the same exact program on the AS/400, and in one case, it took two minutes and 15 seconds on the 36, only 50 seconds on the 400."

Parade hired Management Dynamics, Inc., also in Lyndhurst, N.J., to convert custom-developed applications, portions of which dated back to a System/34. Most of the conversion dealt with "extensive modification in the sloppiness of original RPG-II code," Gentile says.

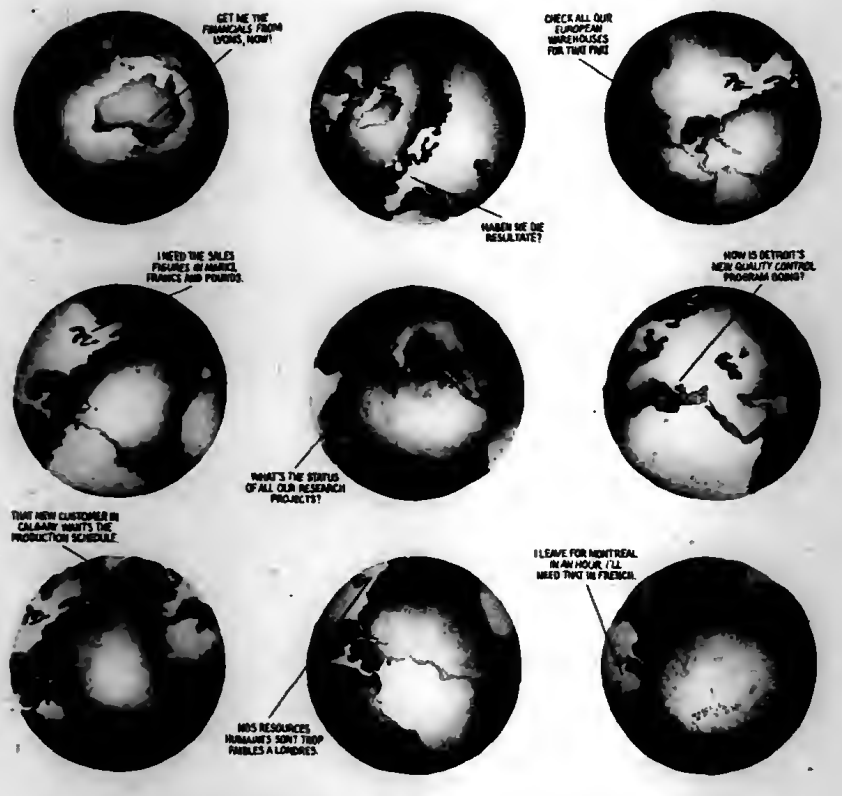
Parade worked with Management Dynamics at a flat rate of $95 per hour to convert an advertisement tracking program that targets ad copy for specific editions of the magazine, which is carried by 336 newspapers nationwide. Gentile says it is not uncommon for Parade to produce as many as 136 versions of the magazine according to advertiser guidelines.

Vanya says that although Financial Technologies charged a hefty price of approximately $65,000 for its services, it did "a very good job, very professionally." Vanya says prices are dependent on the complexity of the system, with a flat rate of $25 affixed to any "unit," which could be one program, one procedure, one file or one screen.

The entire project took about five weeks: one week to clean up the old RPG file, two weeks to convert the file and two weeks to test the AS/400 native code. Vanya stresses the importance of the testing procedures, which Financial Technologies handled "with a lot of best possible quality test cases to let us implement the conversion faster. A lot of people don't supply enough test cases. FTI stays on and even helps with nonrelated problems."

At a cost of $5,000 over about 30 days for Computer Resources and Technologies' work, Gardner is a satisfied customer. "It cost considerably less than we thought it would, and we're pretty satisfied with the RPG conversion," he says.

Webster is a free-lance writer based in San Francisco.



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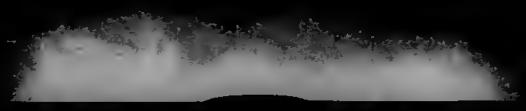

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BMC Software, Inc. is the leader in technology and service, according to a March 1991 SoundView Financial Group Strategic Analysis Report. The report data was taken from an independent survey of 85 large IBM mainframe users from Fortune 500 companies.

The results are quoted as, "An impressive 90% of BMC users felt the company was above average as a technology leader." This was the highest rating among the five ranked software vendors.

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BMC's top ratings for technology leadership and service reflect a high level of commitment to research and development. BMC invests an average of 25% of annual revenues in R&D and support.

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33. Dir./Mgr. Sys. Development, Sys. Architecture
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PRODUCT REVIEW

Pacbase: Professional but slow

CGI Systems, Inc.

This is the tenth in a series of performance benchmarks that focus on the integration of computer-aided software engineering (CASE) and fourth-generation language (4GL) products. The benchmarks are monitored by an independent team headed by David Whiteside, managing director of Computing Futures Ltd. and his associate, Prof. Eberhard Rudolph, formerly of the University of Auckland, for exclusive publication in Computerworld.

Each product is observed in action over a three-day period during which a vendor team solves the case study project costing system, an application that is familiar to most information systems professionals. The team's mission is to demonstrate the capability of the major CASE/4GL environments to deliver complete and complex business solutions under "live fire" conditions.

In this issue, we look at Pacbase from CGI Systems, Inc.

•

The benchmark was carried out at CGI's U.S. headquarters in Pearl River, N.Y., by a three-member team. Mainframe computer resources, however, were located at CGI's St. Marc, France, data center. An incorrect development environment definition at its central computer site prevented the completion of the benchmark work (both the complex report and the interface) during the three-day test. We received the complex report solution the next working day. The batch interface solution was not completed because team members had other commitments. In addition, Pacbase does not provide a query language for DB2, and therefore the inquiry section was left out.

However, what was completed by the team was well-presented and robust. In addition, it complied with IBM's Common User Access. For these reasons, the level of completion had to be rated "fair," a result which was marred by poor support.

•

The team spent 57 hours planning the benchmark details and selecting the implementation strategy. Following their development plan, the team made slow but steady progress and completed their solution in just under 32 hours. At no stage, however, were solutions rushed. We marked the speed of development as "fair."

•

The speed of maintenance was "good." The solution of a 60 function point modification was produced in three hours, but it lacked the report and inquiry functions.

•

The documentation was detailed and understandable. The design graphics were well-presented with program logic shown in structured form. User documentation could be produced from the central repository. Selecting specific documentation, however, can be a tedious and lengthy process. We rated the level of documentation as "very good."

•

The central Pacbase repository ensured a high level of integration between the design in the Pacdesign workstations and the generated mainframe code. The only flaws we detected were that error messages were not automatically integrated into the code. Integration, however, stops at Cobol source generation. Final system integration has to be done manually, which requires substantial job control language coding. All things considered, the level of integration was "good."

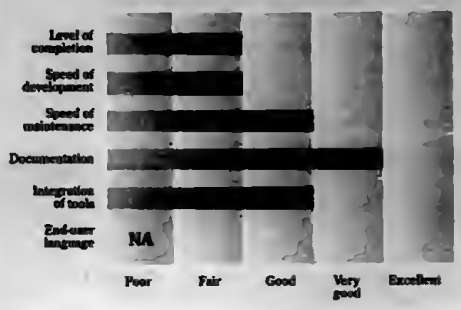
•

The query language Pacquery does not support the DB2 files that were used in the benchmark. Without any alternative query language of its own (and without knowledge of any other DB2 query language), the team provided no end-user language solution.

•

In summary, with considerable effort Pacbase provided a sound solution but did not deliver in the reporting and inquiry sections. While interfacing to a wide range of target environments, Pacbase does not assist in the final integration. As experienced in the batch system foul-up, a lot of work at a target computer system is still required.

Consultant's assessment



The Pacbase tool kit

- Pacdesign – CASE tool
- Pacbench – Development platform
- Cobol – IBM Cobol compiler
- DB2 – IBM database

Development and maintenance report card

ANALYSIS AND DESIGN: B
Considerable planning was done, which included the definition of target computer-naming conventions. The Yourdon methodology was used to define the data model and the data flow diagrams.
Strength: It has a central repository.
Weakness: The necessary physical implementation conventions are not supported.

DATABASE SETUP: A
This was a swift and automatic operation, which was driven by the data design that is held in the central repository. In addition to the user data, any work areas had to be defined as permanent entities in the repository database.
Strength: It has high-speed generation for a range of target environments.
Weakness: Work areas must be part of the repository.

FILE MAINTENANCE TRANSACTIONS: C
With a completion period of almost 24 hours, this was one of the slowest development times in the series so far. A lot of time was required to implement the solution in the target environment. The results were almost always correct the first time around. The results were also very robust with a pleasing presentation.
Strength: There were few mistakes.
Weakness: It is a lengthy process.

COMPLEX TRANSACTION: C
By taking more than 18 hours to complete, it was the slowest development in this series to date. A lot of processing logic, such as time arithmetic, had to be done cumbersomely at a detailed level. But once delivered, it had a good result.
Strength: There were few mistakes with an excellent operations result.
Weakness: It is a tedious process.

INQUIRES: NA
The CGI product Pacquery does not support DB2 files.
Strength: NA.
Weakness: NA.

COMPLEX REPORT: C
This part also took a lot of time and had to be completed after the initial three-day period because of an incorrect development environment. This was overcome at the end, and the results delivered the requirements of this section.
Strength: Report layouts can be painted.
Weakness: Batch work is handled separately.

INTERFACE: D
The Ashton-Tate Corp. Dbase data was transferred to the main computer. A sophisticated batch-edit program was developed but could not be tested because of the fault in the development environment.
Strength: Error conditions are professionally handled.
Weakness: There was an incomplete solution.

ENHANCEMENT: D
This was a rushed job because time was running out. The reporting and inquiry parts were not included in the solution. Changes were done at the Pacbase code level, without the Pacdesign level being consulted or updated during the enhancement stage.
Strength: It includes a central repository.
Weakness: There was an incomplete solution.

Staging the benchmark

Total effort: 130 hours
Elapsed time: 31 hours, 35 minutes
Team size: 3

The solution was initially designed on a 4M-byte IBM Personal System/2 workstation under DOS Windows 3.0 sharing the mainframe Pacbase repository. The application was done on a remote IBM 9121-260 mainframe running under MVS, CICS and TSO.

Details of the product are available from CGI Systems, Inc., P.O. Box 1645, One Blue Hill Plaza, Pearl River, N.Y. 10965. (914)735-5030.

Open systems

FROM PAGE 25

to be available from multiple vendors, he added.

To increase market penetration in the '90s, multivendor product availability and standards adherence must move to the front of the development cycle, Shaffner said. To accomplish this, vendors must cooperate on research and product and market development, he said.

Vendors also need to 'standardize' proprietary products, as DEC proposes to do by providing X/Open branding for its VMS operating system, and they must make their proprietary products available for distribution to other vendors, Shaffner added.

"We must have continued rapid growth of open systems because there is no economic alternative to what the market is asking for," he said.

> "WE'RE MOVING TO architectures that are owned by the customer."
>
> DON TAPSCOTT
> DMR GROUP

Shaffner's comments echoed those of Don Tapscott, director of emerging technologies at DMR, who said there has been a profound power shift in the industry from vendors to users.

"We're moving to architectures that are owned by the customer," Tapscott said. "These are based on industry standards, and the vendors are required to be compliant."

Both Tapscott and Shaffner expressed concerns about the rise of such nonvendor-aligned user groups as the User Alliance for Open Systems.

"By X/Open's count, there are now more than 20 of these groups," Shaffner said. "There is a serious danger that these groups could refragment the industry with proprietary user specifications when we're just getting rid of proprietary vendor specifications."

With the increase in multivendor environments and loosening of one-vendor account control, "we need a vendor-independent user requirements process," Tapscott said.

He said a single process is critical at this juncture and seems to be coming from X/Open.

"The fact that there are vendors funding X/Open is desirable — the user requirements development process should be a collaborative, interactive process," Tapscott said.

Grantham is a free-lance writer based in Toronto.

DEC adds memory, cuts prices

MAYNARD, Mass. — Digital Equipment Corp. recently enhanced its VAX 4000 line by introducing a 64M-byte memory board for the VAX 4000 Model 300 and announcing quantity prices for its Digital Systems Storage Interconnect disks as well as a 6% price reduction on packaged, dual-host Model 300 systems.

With the 64M-byte boards, which are priced at $50,400, customers can enhance their application performance by doubling the memory capacity of their Model 300s from 128M to 256M bytes. Previously, the largest memory upgrade was a 32M-byte board.

Customers who buy disks in quantity will save 18% to 22% with the new disk packages, which range in price from $30,200 to $108,400.

The packaged pricing for dual-host VAX 4000 systems also provides cost savings to volume buyers, according to DEC officials.

The 64M-byte VAX 4000 systems range in price from $83,710 for a Vaxserver Model 300 to $264,330 for a dual-host time-sharing model.

MARYFRAN JOHNSON

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CREWS
PDSMAN
FLEE

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NEW PRODUCTS — SOFTWARE

Development tools

Acucobol, Inc. has begun shipping Acucobol-85, a Cobol compiler for the Hewlett-Packard Co. 9000 Series 700 workstation platform.

Acucobol features built-in source-code debugging, pop-up windowing and color and line drawing. It is available on more than 450 hardware platforms.

Pricing ranges from $1,313 to $2,100, depending on workstation model.

Acucobol
Suite 201
7950 Silverton Ave.
San Diego, Calif. 92126
(619) 689-7220

Applications packages

Lawson, Inc. has ported its financial, human resources and distribution software product lines to the IBM AIX operating system.

The company also announced its report writer and computer-aided software engineering tools for AIX platforms. The tools allow users to customize reports and screen formats for the business software modules and to modify standard applications at the systems level. Lawson's products are targeted at midsize corporations.

The company also announced the availability of the Lawson Accounting System software for Digital Equipment Corp.'s Ultrix operating system.

Pricing for the products starts at $20,000, depending on platform and number of users.

Lawson
1300 Godward St.
Minneapolis, Minn. 55413
(612) 379-0258

DSD Corp. has announced availability of its C-PLAN Project Management System on Digital Equipment Corp. systems under DEC Ultrix as well as VAX/VMS environments.

Version 2.0 of C-PLAN includes import/export options for sharing data among related applications, report customization and information screens for review of project and resource data.

Licensing begins at $4,995, depending on CPU size.

DSD
18912 North Creek
Pkwy. #105
Bothell, Wash. 98011
(206) 485-7564

And lost weekends are the least of it. Far more costly is the loss of productivity that can result—company wide—when people lack the tools to manage increasingly complex operating environments.

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Goal

HARDWARE

I/O devices

QMS, Inc. has announced support for Printronix, Inc. line-printer commands on the QMS Magnum CF 2215 continuous form laser printer.

The Magnum CF 2215 handles text, industrial graphics and automatic number identification application tasks typically done on impact printers, according to QMS.

The laser printer has an output of 22 page/min. with resolution of 240 dot/in. and offers a 110,000 page per month duty cycle.

The controller is based on the QMS Code V Version II programming language.

The printer is priced at $59,995.

QMS
One Magnum Pass
Mobile, Ala. 36618
(205) 633-4300

Data storage

Andromeda Systems, Inc. has introduced the SCDC, a small computer systems interface (SCSI) caching disk controller for Digital Equipment Corp. Q-bus-based systems.

The product offers asynchronous and synchronous data transfer speeds of up to 5M byte/sec. It supports Winchester, floppy, tape and optical SCSI drives and includes 2M bytes of random-access memory cache. Future upgrades will be available by modem.

The cost is $1,495 for an entry-level system.

Andromeda Systems
9000 Eton Ave.
Canoga Park, Calif. 91304
(818) 709-7600

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COMMENTARY

James Daly

Crossing OS cultures

Sociologists call it "acculturation." It's a clunky word used when one cultural group grafts the ideas and behaviors of another societal sector onto its own. The resultant gumbo is a fresh composite culture in which new features emerge while others are combined or gradually lose importance.

The computer industry got a large taste of acculturation recently during the release of Apple's System 7.0, its next-generation operating system. Another mouthful arrives June 11 when Microsoft announces its update to DOS, the darling of the corporate world. Instead of butting heads and highlighting their differences, Apple and Microsoft must face the fact that their respective desktop operating systems have swapped roles and turned into something they'd never thought they would be: similar.

System 7.0 will be the most effective weapon in Apple's arsenal when it goes for big corporate accounts. The firm that was once laughed out of the boardroom has produced a meaty update that will delight users who desire advanced features such as interprocess communication,

Continued on page 44

Notebook PCs ride portable power wave

The future of I486-based notebook computers looks lightweight and bursting with power

BY MICHAEL FITZGERALD
CW STAFF

ATLANTA — The next wave of notebook computers based primarily on Intel Corp.'a I486 chips were much in evidence at Comdex/Spring '91 last week. These offerings gave a glimpse of the future for personal computing: portable and powerful.

Zenith Data Systems exemplified both trends. It unveiled a file server based on Intel's I486 chip, and two battery-powered portables based on its 486 and 486SX chips. The file server, the Z-486/33ET, runs at 33 MHz, has 10 Extended Industry Standard Architecture (EISA) slots, eight half-height drive bays, a 395W power supply and can accommodate up to 64M bytes of random-access memory.

The basic model will offer 8M bytes of RAM, a 338M-byte hard drive, an EISA small computer systems interface (SCSI) adapter and IBM Video Graphics Array (VGA) for $14,999. A stripped-down model with 4M

COMDEX

bytes of RAM and no hard disk or controller costs $11,799.

Zenith Data'a Supersport 486 and Supersport 486SX are among the world'a first battery-powered 486-based portables. The machines each weigh 15 pounds and offer some three hours of battery life. Standard configurations come with 4M bytes of RAM, expandable to 16M bytes. The VGA screen offers 64 shades of gray, and the 486 will support color when it becomes feasible. The portables will not ship until the third quarter of 1991.

Ergo Computing, Inc., the Peabody, Mass.-based maker of the Brick, also brought out a high-powered portable called Moby Brick. Moby Brick is an 8- by 11½-in. box based on a 33-MHz I486 chip that features 32M bytes of RAM, a 120M-byte hard drive and 1,024- by 768-pixel VGA graphics in an 8.7-pound box. As with the smaller Brick, keyboard and monitor are supported but not included. The cost is $3,995.

National Business Computers & Communications offered Dockit, a portable docking system that is scheduled for release in July. It offers up to a 400M-byte hard disk and digital audio tape backup options, accepts two AT expansion cards and weighs 12 pounds.

The company also displayed an Intel I860 reduced instruction set computing workstation that comes with a 209M-byte SCSI hard drive, 8M bytes of RAM expandable to 64M bytes and 4M bytes of RAM for graphics display.

Micronics Computers, Inc. has announced a 33-MHz, 80386DX-based portable computer. Its Mport 333 weighs 14.8 pounds, is AC-powered, has 4M bytes of RAM and a 40M- or 120M-byte hard drive. It is priced at $4,995 or $5,495.

Windows applications pour it on at Comdex

BY PATRICIA KEEFE
CW STAFF

ATLANTA — Attendees at a mostly low-key Comdex/Spring '91 were showered with a flood of applications announcements touting new support for Microsoft Corp.'a Windows 3.0 environment.

Leading the charge were Lotus Development Corp. and Wordperfect Corp., which continued to tantalize users with demonstrations of the still-unshipped Windows version of their market-leading packages — 1-2-3 and Wordperfect, respectively. Lotus also demonstrated Freelance graphics for Windows (see story page 45).

Among those jumping on the Windows 3.0 bandwagon were R+R Associates, Inc. in Mount Vernon, N.Y., First Byte in Santa Ana, Calif., and Merasoft Corp. in Orem, Utah.

R+R announced Shoebox for Windows, a port of its time and facilities manager that is said to have an installed base of 200,000 DOS users. Totally rewritten for Windows, the package now includes the ability to see more than one appointment schedule on the screen at a time. On a network, it also allows users to schedule group appointments and send messages with requests for acknowledgment. A visual alert lets users know when messages have been received.

Text retrieval

R+R also introduced Notequest 1.0, a text retrieval utility that lets users build a database of all the words in their documents. The user selects keywords to instantly locate, cut and paste as well as print citations from wherever the citations may be.

First Byte unwrapped Monologue for Windows, synthesizing text and data running under MS-DOS into speech. It runs in the Windows multimedia environment and is able to request and exchange data with other applications through Windows' Dynamic Data Exchange message protocol. It operates as a memory-resident terminate-and-stay-resident utility.

Formerly known as Powerware, Merasoft introduced E'vent Manager, agent software said to give users control over the Windows environment by

Continued on page 45

Investing in Tomorrow's Bottom Line

Jerry Barnes, Chrysler Corporation

MICRO FOCUS®
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Micro Focus Workbench Provides Chrysler Corporation with a Competitive Edge

In the fiercely competitive auto industry, programmers at Chrysler Corporation are using Micro Focus PC-based productivity tools to cut program development time and help move products from the drawing board to the showroom floor faster.

"The bottom line is that our business needs change quickly and we want to streamline the software development process as much as possible so Information Systems can be responsive to all of our operating units," said Jerry Barnes, Chrysler's Manager of Systems Engineering Technology

Moving application development to a workstation environment allowed Chrysler to use its mainframe resources more efficiently and speed up development cycles by taking advantage of productivity tools not available in the mainframe programming environment. With this solution, programmer productivity improves greatly without a large investment in additional mainframe resources; an important consideration in uncertain economic times.

"The mind-set here a few years ago was, 'why would anyone want to do anything away from the mainframe.' Now, we have over 200 trained COBOL/2 Workbench users."

With the Micro Focus COBOL/2 Workbench, programmers can develop and maintain full-scale CICS/VS and CICS DL/I applications independent of the mainframe in a fraction of the time.

"We quantified the time spent on typical software development activities. We showed how we could make a code change, compile the program, detect an error, correct the error and recompile the program again in less time than it would take someone to logon to the mainframe and submit the first compile In many cases, the developer would make the change on the PC in two to three minutes, while it could take close to 20 minutes on the mainframe."

Jerry Barnes made his case for Micro Focus COBOL/2 Workbench based on greatly improved productivity The Micro Focus edit-check-debug cycle, now an industry standard for PC-based programming made a big impact on throughput and costs.

Make the case for Micro Focus COBOL/2 Workbench in your company. Call to get your "Makecase" kit today: 800-872-6265.

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Just because it's wireless, that doesn't mean an RF terminal can talk to your host computer.

In fact, LXE is the only RFDC system that can talk to your computer on an Ethernet 802.3 network. That means instant connectivity, with no special programming.

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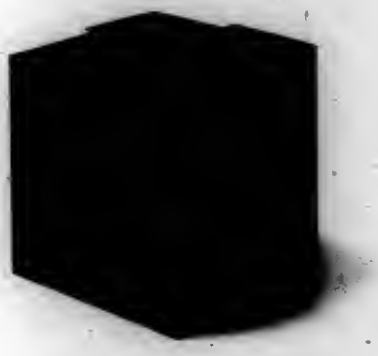
LXE



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The IPL 6865 Subsystem.
The next generation of 8mm storage.

It's here.

Twice the speed with double the storage capacity. The IPL 6865 subsystem gives you both to revolutionize high-density 8mm storage for IBM midrange systems. Utilizing advanced helical scan technology, the IPL 6865 stores the equivalent of 24 reel-to-reel tapes on a single 8mm cartridge and is ideal for unattended back-up operations. The 6865 can also be mixed and matched with different tape media via our universal controller for maximum

flexibility. Most importantly, each 6865 subsystem comes from IPL, the company that introduced 8mm storage for the IBM midrange market in 1988 and pioneered the development of this new technology. With 18 years of IBM plug-compatible experience and thousands of installations worldwide, we provide service and support you can rely on. Open up to the IPL 6865 8mm subsystem today. For more information call IPL toll-free at 1 800 338-8475, in Massachusetts call 617 890-6620. Or, in Europe call our Belgium office at 011-32-2725.40.87.

ipl
SYSTEMS

Specifications

The IPL Advantage

The 6865 operates with IPL's universal controller which allows you to mix different tape media on one controller for flexibility. As a result, the 6865 can be used alone or combined with the following IPL products: IPL's 9 track reel-to-reel tape subsystem, IPL's ½" cartridge 3480/3490-compatible tape subsystem, and IPL's other 8mm cartridge tape subsystems in a single rack-mounted subsystem. Each 6865 unit can easily be mounted into any existing 6800 configuration.

IPL Single-Drive Option

For applications requiring single-drive capacity, the IPL 6655 8mm table-top subsystem is an economical alternative. Compatible with IBM AS/400 9404 and, for specific applications, 9406 systems, the IPL 6655 utilizes advanced helical scan technology and Exabyte's 8500 drives to store up to 5.0GB of data on a single 8mm cartridge—all at a transfer rate of 500 KB per second. The 6655 is ideal for performing unattended backup and features a full LED readout showing current drive operation, position on tape, and diagnostic codes programmable in five languages.

Quality Service

As the innovator in 8mm storage technology to the IBM midrange market, no manufacturer understands this area better than IPL. With 18 years of IBM plug-compatible experience, IPL backs its technology with a commitment to quality service and rapid response. Maintenance and technical support are available 24 hours a day, seven days a week, from service locations throughout the world.

More than 4,000 installations benefit from our high quality support and technology. Throughout the world, no one knows IBM storage better than IPL.

For More Information

To learn more about the 6865 and 6655 cartridge subsystems, or any other IPL product, contact us at 1 800 338-8475 (in MA call 617 890-6620), ext. 2135. In Europe contact us at the IPL Systems International Office, Imperiastraat 10, 1930 Zaventem, Brussels, Belgium, 011-32-2725.40.87 (FAX 32-2-725.40.29).

Models

6865-A01	Single Drive with External Controller
6865-A02	Dual Drives with External Controller
6865-A11	Single Drive with Internal Controller
6865-A12	Dual Drives with Internal Controller
6865-B01	Single Drive Add-On Drawer
6865-B02	Dual Drive Add-On Drawer
6865-C01	Add-In Drive Upgrade for 6865-XXX
6865-C11	Add-In Drive and Controller Upgrade for 6860-XXX
6655-A01	Standalone Single-Drive and Controller
6655-C11	Upgrade Kit for 6650 to 6655

System Compatibility	AS/400 9404 AS/400 9406 models B30–70, System/38
Attachment Feature	
6865 AS/400	2604
6865 System/38	7970
6655 AS/400/9406	2601
6655 AS/400/9404	SCSI
Capacity	5GB
Media	Data certified 8mm
Data Buffer Size	1MB
Transfer Rate	500KB/second
Search Speed	37.5MB/second
Read Back Check	Read after right with perfect data
Number of Tape Drives per Model	
A01/A11/B01	1
A02/A12/B02	2
Maximum Channel Attachments	
6865 A01/A02	2
6865 A11/A12	1
6655 A01	1
Tape Speed	
inches/second	0.429
mm/second	10.89
Number of Tracks per Inch	1638
Data Density	74 million bits/sq. inch
Data Compression	Yes, as part of the attachment feature 2604/7972

Physical	6655 A01	6865 A01/A02	A11/A12/B01/B02
Rack Mountable	No	Yes	Yes
Width (inches)	9.3	19	19
(cm)	24.0	48	48
Depth (inches)	12.5	24	24
(cm)	31.8	60	60
Height (inches)	5.8	12	5
(cm)	14.8	30	12
Weight (pounds)	15.0	71	40
(Kg)	6.8	32	18
Voltage (A.C.)	100–120 200–240	100–120 200–240	100–120 200–240

Operating	
Cartridge Load Time	35 seconds
Rewind Time	75 times nominal tape speed

Environment	
Operating Range	60°–90°F 15°–40°C
Relative Humidity (non-condensing)	20–80%
Heat Output (BTU/hour)	760 maximum

ipl SYSTEMS

60 Hickory Drive, Waltham, MA 02154
1 800 338-8475, ext. 2135 In MA (617) 890-6620, ext. 2135 FAX (617) 890-8128

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Application lets airline use its SMARTS

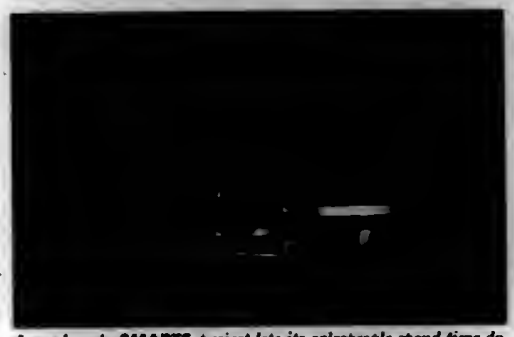
ON SITE

BY MICHAEL FITZGERALD
CW STAFF

DALLAS — American Airlines has long given its frequent flyers "Aadvantages," but it was just last year that it gave its salespeople smarts.

Street smarts. Computer smarts. Sales smarts. That intelligence came in the form of laptop computers and an application called the Sales Management And Report Tracking System (SMARTS). The latter was designed by American's Sabre Computer Services Division in conjunction with consultancy Shepherd Systems, Inc.

Shepherd designed applications using Borland International, Inc.'s Paradox database, while American's information systems group developed bulletin board functions and telecommunications relay scripts for data compression using Microcom, Inc.'s Relay Gold communications package.



American's SMARTS *project lets its salespeople spend time doing what they do best: influencing travel agents to book American*

SMARTS was just an idea in early 1989 when American decided to look into ways to strengthen its sales efforts. The airline has 365 employees who visit travel agents to increase the number of passengers they book on American's airplanes.

American's salespeople had been using dumb terminals attached to mainframes, but they did not have access to information American deemed valuable, such as the Sabre reservations system. The SMARTS project gives the salespeople the ability to turn data from the mainframes into charts and graphs and to do automated expense reporting and contracts.

"Our salespeople were getting inundated with paper in a paper world," said Kathie Stokes, SMARTS project manager. "All the sales data was coming to them in reams and reams of computer paper. They were spending a lot of time going through this paper world."

Brad Harslem, vice president of Sabre Computer Services, said American would send each salesperson six to eight inches' worth of computer reports each month, giving them detailed sales data that now is shipped in a variety of formats to their portables.

Although IS recognized the need to eliminate some of this paper, it could not react quickly enough in its Cobol environment to meet the needs of its users, Harslem explained. Paradox allowed such a move.

With SMARTS, American set out to create a user-friendly environment that would run on laptops and provide salespeople with data from remote locations.

To do this, Sabre combed its corporate databases for select sales and territorial information and created a mainframe-resident database for the laptop users. For year-to-year comparison purposes, American included 13 months of sales data.

Laptop users tie into this data via Relay Gold, which gives them access to American's Aanet.

Yearlong rollout

The development of SMARTS took one year. American selected Grid Systems Corp.'s 1550 laptop, which is an Intel Corp. 80386SX-based machine with 120M-byte hard drives.

In September, American installed Microsoft Corp.'s Windows 3.0 with its Excel for Windows spreadsheet, Paradox and Relay Gold, choosing those packages because they fit in with corporate standards.

SMARTS comes with several analytical features and built-in data manipulation tools that allow salespeople to build their own information queries.

While American refused to disclose precise numbers, it cited benefits such as time savings and the ability of salespeople to make more visits.

"We have seen a return on investment in the product, with significant productivity gains," Stokes said.

"We are the only airline with this capability today, and we think that's created a significant competitive advantage for our corporation," Harslem added.

Chip boosts Windows

BY JAMES DALY
CW STAFF

SUNNYVALE, Calif. — A controller chip that its inventors claim can dramatically increase the speed of applications running on Microsoft Corp.'s Windows graphical user interface has been announced by Weitek Corp.

Weitek President Art Collmeyer said recently that typical Windows-based word processing, spreadsheet and drawing programs spend up to 80% of their CPU time on bit block transfer and line drawing.

The single-chip controller, the W5086, intercepts bit block transfer and line drawing functions from Windows' graphical device interface and processes them with specialized hardware, Collmeyer said. The 70-MHz W5086 increases bit block transfer speeds up to 26 times while increasing the speed of line drawing functions, he added.

The chip is suitable for a 16- or 32-bit system and is expected to be available by the fourth quarter in add-in boards costing approximately $150. Although initially incorporated through plug-in boards, it will eventually be incorporated into the motherboards of new systems.

Weitek officials also indicated that the chip could eventually be used to accelerate graphical user interface functions on Apple Computer, Inc.'s Macintosh line.

HP adds low-end box

BY J. A. SAVAGE
CW STAFF

Hewlett-Packard Co.'s introduction of an entry-level Unix workstation last week was seen by observers as a stopgap measure, as it is not part of HP's speedy reduced instruction set computing (RISC) line. The workstation is based on Motorola, Inc.'s 25-MHz 68040 processor running at 22.1 million instructions per second (MIPS).

The introduction included a basic workstation, the 425E, for $5,490 and two graphics workstations, the 425T GRX (grayscale) and 425 CRX (color) for entry prices of $8,990 and $10,990, respectively.

Can't beat RISC

Michael Goulde, an analyst at Open Systems Advisors, Inc., said the workstations are unlikely to attract new customers to HP. "How could [they] compete with what HP already has out there in price/performance? It's not so much RISC vs. [complex instruction set computing]; the price/performance just happens to be on RISC."

Scott Underwood, a systems administrator at David Kelley Designs, said that while extending the life of his software is positive, the "numbers are impressive on RISC." He would rather make the change in operating system, networking and server hardware to get the performance of HP's RISC computers.

Karl Freund, marketing manager for workstations at HP's Fort Collins, Colo., site, said current users could expect the 400 line to get up to 40 MIPS in performance by 1993. "But being honest, at some point, users will want to move to RISC."

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We want you! If you are familiar with ISPF/PDF on IBM mainframes and are working on OS/2, we want you to put SPF/2 to the test in your workplace. See for yourself how SPF/2 provides all the editing power of the mainframe program, and more.

SPF/2 offers you the same familiar environment, command structure and editing capabilities on your PC. You already know how to use it—no training required.

SPF/2 takes advantage of OS/2's powerful features. It uses virtual memory to handle very large files. In addition, HPFS (High Performance File System) long file names are supported. And SPF/2 uses OS/2's REXX for its macro language—75 mainframe-compatible ISREDIT edit sub-commands provide the interface.

SPF/2's 3270 compatibility also contributes to your ease-of-use on the PC. SPF/2 processes keystrokes in the same way as the OS/2 Extended Editing 3270 emulator, including NEW-LINE and ENTER. SPF/2 even displays the same status indicators.

SPF/2 has features not available on the mainframe. For example, SPF/2 supports 48 PF keys, automatically adapts to the various OS/2 video modes (full-screen or text-window), and scrolls the file as you move the cursor. In addition, SPF/2 has virtually instantaneous response time, 100% system availability, and no connect-time charges.

If you have a departmental or company-wide need for SPF/2, a special cost-effective Multi-User License is available directly from CTC. For information, call our Sales Department at (800) 336-3320.

Test SPF/2 for yourself with a free real-working-code demo disk—it contains a production-level version of SPF/2 except it will not save your editing changes to disk. Call our toll-free, Demo Request Hotline at (800) 648-6700 and ask for SPF/2 Demonstration Disk #173.

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If you had a shutdown, how long would it take to find the problem? And how much would that downtime cost your company?

With the SynOptics distributed management approach, you can isolate problems in just seconds.

The reason is simple. Visibility. The SynOptics intelligent hub architecture gives you the ability to see exactly what's going on within your LAN—port by port, node by node, in real time.

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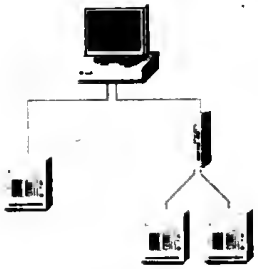

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Daly

FROM PAGE 39

virtual memory and 32-bit addressing as well as applications developers who hope to exploit the power of the additions. Microsoft, meanwhile, has seen the advantages of Apple's approach and outfitted the once-stodgy DOS with a rewritten graphical shell as well as added memory and utilities.

What's going on? Apple and Microsoft have been known as leaders, not followers. Now they're following the most important leader of all: the user.

Apple has seen its market share slip dramatically in the past few years, and many insiders see System 7.0 as a business necessity. By providing users and developers with a more muscular system, the new software could lift sales of Apple's more expensive machines just as sales of those machines have begun to lag. The company even hopes the advances will be compelling enough to persuade DOS users to switch to the Macintosh. Apple will advertise System 7.0 in magazines directed at users of IBM-type PCs.

To be sure, Apple isn't abandoning operational simplicity for dull corporate muscle. The Macintosh interface is still superior to Windows, but Apple is being forced to innovate at a faster pace than before. With System 7.0, developers can direct high-level services using only a handful of system calls, instead of the dozens required in the past. Users can thus expect to see communications capabilities in any application where it makes sense, simply because it is easier for developers to include them. The net effect is that Macintosh applications will tend to be more powerful and still easier to use.

While System 7.0 is laying the groundwork for new types of computing, DOS 5.0 makes no such claims. "We're no longer trying to grow the application base for DOS," said Microsoft's vice president of applications, Mike Maples.

Instead, the new system was created to make the life of the end user a lot simpler — not a feature DOS was known for. DOS 5.0 is in many ways rectification for the nightmare of DOS 4.0, which was filled with scores of software incompatibilities. Many of the bugs were weeded out when Microsoft reworked the code into DOS 4.01, but many stayed with the DOS 3.1 and 3.3 releases, and the prestige of DOS took a hit.

DOS 5.0 subsequently addresses many long-standing user requests, including expanded memory features and a revamped graphical shell. Along the way it should remove the bitter taste of DOS 4.0.

The next few weeks will see Apple and Microsoft exchange hats in a fundamental fashion. The winner, of course, is the Macintosh and DOS user looking to secure the best of both worlds. The two computer giants may have pooh-poohed each other's approach to desktop systems in the past, but a more demanding user base has proved that it's never too late to teach old dogs new tricks.

Daly is a *Computerworld* West Coast senior correspondent.

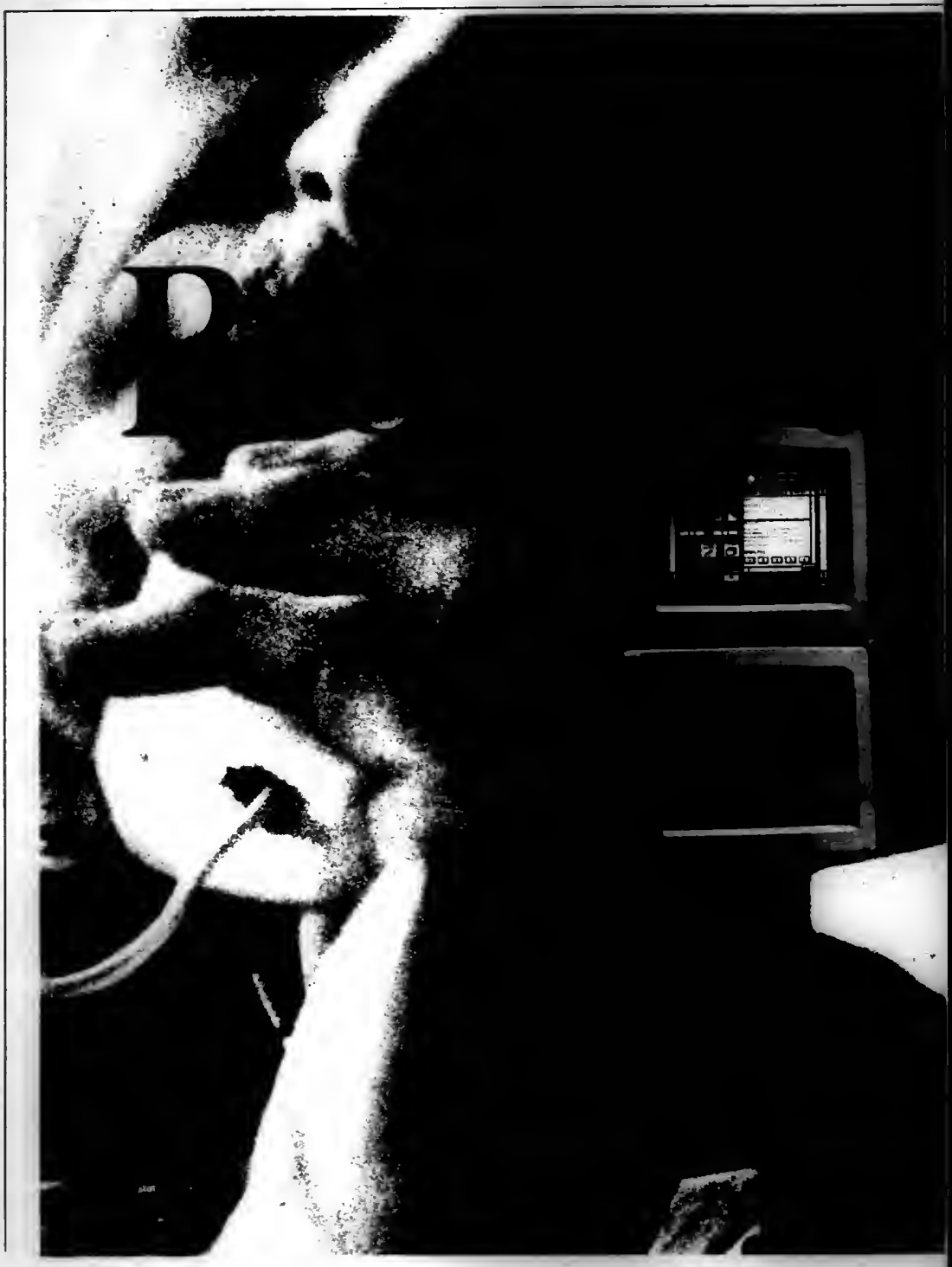
DEC opens ACA to DDE

MAYNARD, Mass. — Digital Equipment Corp. said it has extended its Application Control Architecture (ACA) to integrate with Microsoft Corp.'s Windows V3 Dynamic Data Exchange (DDE) and Object Linking and Embedding (OLE) mechanisms.

This will allow users of DDE-compliant Windows 3.0 applications to invoke and interact with applications transparently on DEC's Unix and VMS systems, the vendor said.

First announced in December 1990, ACA is an object-oriented software technology said to facilitate dynamic linking of independently developed applications across the network.

According to DEC, the integration of DDE/OLE and ACA means users will not have to modify Windows applications to link to the DEC systems.



Lotus delivers tool kit for Improv

BY PATRICIA KEEFE
CW STAFF

CAMBRIDGE, Mass. — Lotus Development Corp. has shipped the Application Programming Interfaces (API) Toolkit for Lotus Improv, a version of its 1-2-3 spreadsheet for Next, Inc.'s namesake computer.

The tool kit is said to provide developers with the programming tools to automate Improv tasks, navigate through Improv models, connect to external data sources and access Improv from independent applications.

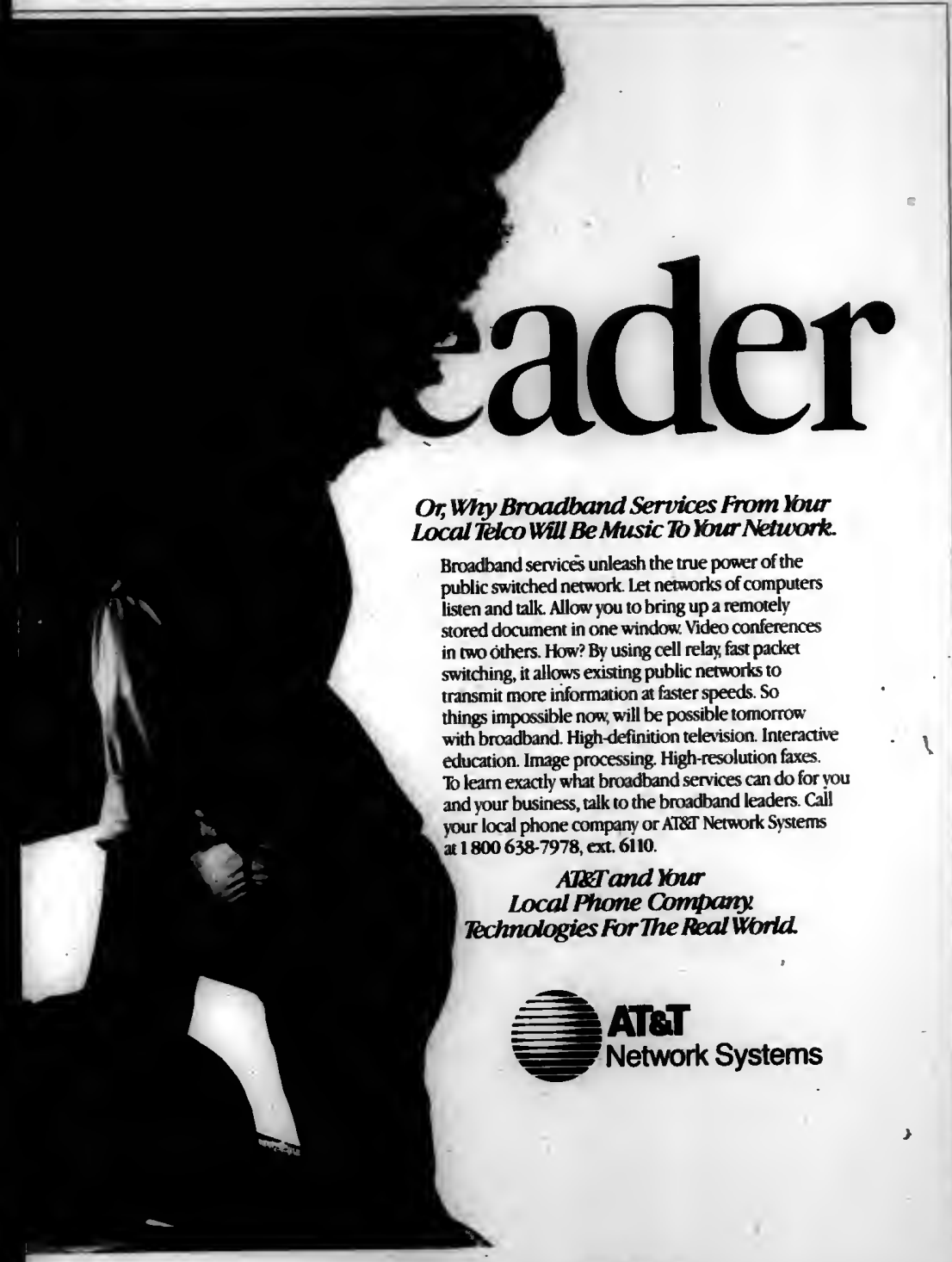
Jeffrey E. Anderholm, Improv marketing manager, said the API Toolkit will open the door to customized applications and the potential for add-on products.

Objective Technologies, Inc. (OTI) in New York is the first developer to create third-party software for Improv using the Improv Toolkit. OTProvide is a database link and query manager that allows users to import data from relational databases directly into Improv.

OTI President Alex Cone said he created a working version of OTProvide in one month, thanks to the tool kit and the Next development environment.

The API Toolkit features two implementations of the API: one for use with independent applications and another for use with the code that is dynamically linked to Improv.

Other tool kit specifics include internal Improv function calls, utility routines with associated source code, examples that show how to use the API cells, a simple back solver and an API link tester. The API Toolkit is available free of charge to Improv users and Next developers.



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Freelance goes Windows

CAMBRIDGE, Mass. — Lotus Development Corp. recently began demonstrating Freelance Graphics for Windows to the press and analysts.

One highlight of the package is Smartmaster, which Lotus said will make the package easy to master, from the initial learning curve through presentation creation. Instead of starting off with a blank "page," Smartmaster takes a fill-in-the-blanks approach by providing users with sets of predesigned pages.

A 30-minute on-line tutorial called Quickstart guides users through the creation of their first presentation. Other new functions are global editing capabilities, more than 500 clip art images, predesigned color palettes, powerful charting capabilities and a wide range of editing tools such as polygons, circles, ellipses, Bezier curves, arrows and points editing. Also supported is Microsoft Corp.'s Object Linking and Embedding, Dynamic Data Exchange and the Windows Clipboard.

Windows

FROM PAGE 39

giving the computer time and system awareness vs. radically adjusting the Windows interface.

According to the developer, the package works with the user to decide what commands to execute and when to execute them — even if the user is not there. All other applications on the computer become satellite programs, working together in any way the user determines.

Multimedia was another Comdex theme buttressed by related product announcements.

Expert-Ease Systems, Inc. demonstrated Intelligent Tutor, a multimedia training tool developed using its Guild user interface development tool. Intelligent Tutor combines graphics with audio and video media running under Windows 3.0.

Online Products, Inc. showed digital sound adapter cards that let developers incorporate randomly accessible audio sound bites into Windows-based multimedia presentations.

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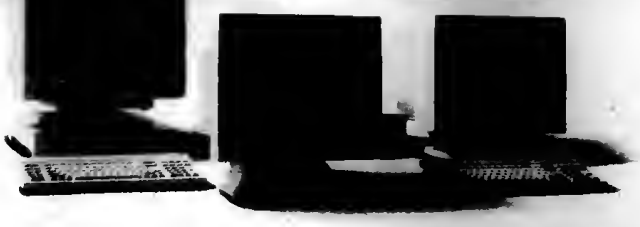

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S. 76

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for more information. Then, instead of just striking a spark, you can set the world on fire.

HEWLETT PACKARD

NEW PRODUCTS

Systems

Samsung Information Systems America, Inc. has introduced a line of personal computers that include bundled software.

The Sensor SP 286, a 12-MHz system, offers 1M byte of random-access memory, an IBM Video Graphics Array (VGA) monitor, Microsoft Corp.'s MS-DOS, Geoworks' Ensemble and several utilities programs installed on the 40M-byte hard disk.

The 16-MHz Sensor SP 386SX includes 2M bytes of memory and an Extended VGA monitor. MS-DOS, Microsoft Windows 3.0 and advanced utilities are installed.

The SP 286 costs $1,399. The SP 386SX costs $1,995.

Samsung Information Systems
3655 N. First St.
San Jose, Calif. 95134
(408) 434-5400

Cumulus Corp. has announced small-footprint 25-MHz and 33-MHz Intel Corp. 80386-based versions of its GLC personal computers.

Models configured for stand-alone and network use are available. The company reported processor performance of 8.1 million instructions per second by the 33-MHz version.

All models include an IBM Video Graphics Array monitor, 1M byte of memory, a mouse and Microsoft Corp.'s Windows 3.0. Pricing starts at $1,695 for a 25-MHz system.

Cumulus
23500 Mercantile Road
Cleveland, Ohio 44122
(216) 464-2211

St. Croix Computers, Inc. has announced a tower system based on the 40-MHz Advanced Micro Devices, Inc. 386 processor.

A configuration with 4M bytes of random-access memory, 64K bytes of cache memory, a 125M-byte hard drive and a Super VGA monitor is priced at $2,988.

The company also unveiled an Intel Corp. 16-MHz 80386SX-based notebook computer weighing 6.2 pounds.

With a 20M-byte hard drive included, the system costs $2,328.

St. Croix Computers
4661 Stillwater Blvd.
Stillwater, Minn. 55082
(612) 943-8618

Development tools

Custom Micro Concepts, Inc. has announced an upgrade of Cuaccess for Clipper, a tool kit for developing IBM Common User Access-compliant application front ends.

Cuaccess creates adjustable windows, mouse support, push buttons and scrollable lists under Nantucket Corp.'s Clipper Summer '87 development environment. Support for Clipper 5.0 will be added.

The product costs $295.

Custom Micro Concepts
Suite 957
Bowling Green Station
New York, N.Y. 10274
(212) 988-5050

Asymetrix Corp. has released Toolbook 1.5, an upgrade of its development tool kit for Microsoft Corp. Windows 3.0 applications.

According to Asymetrix, performance has been dramatically increased in Version 1.5. New features include the ability to import graphics and handle larger files. Dynamic Link Library and Dynamic Data Exchange support have been enhanced as well.

Toolbook 1.5 is priced at $395.

Asymetrix
Suite 717
110 110th Ave. N.E.
Bellevue, Wash. 98004
(206) 462-0501

Solution Systems, a division of Software Developer's Co., has updated Brief, its personal computer-based text editing tool for programmers.

Version 3.1 adds mouse support, dialog box support and Expanded Memory Specification caching. Other features of the program are keyboard reconfiguration, a macro language and template editing.

The program costs $258; upgrades cost $89.

Solution Systems
372 Washington St.
Wellesley, Mass. 02181
(617) 431-2313

Software utilities

The Sword 1.0, a shorthand typing application, cuts keyboard typing time by up to 25%, according to The Sword Co.

The program includes one- and two-stroke abbreviations for common words and standard suffixes and comes with automatic spacing and capitalization features. It also allows users to input customized abbreviations.

The Sword 1.0 runs in 33K bytes of random-access memory and can be toggled on and off.

The Sword 1.0 costs $69. A tutorial and money-back guarantee are included.

The Sword Co.
Suite 5
4850 Orchard Ave.
San Diego, Calif. 92107
(619) 224-0139

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Compaq's LTE: A desktop-level performer

Technology Analysis — A roundup of expert opinions about new products. Summaries written by New Products Writer Derek Slater.

The 7.8-pound Compaq Computer Corp. LTE 386S/20 is a winning combination: It smoked the competition in a number of speed tests, and reviewers said the system boasts an excellent display and good battery life. A quirky keyboard layout and the above-average price were the only real complaints.

Performance: The LTE scored well in every area tested by personal computer publications, including processor, disk and video speed.

Ease of use: The system's edgelit IBM Video Graphics Array display is crisp and readable, but the 81-element keyboard was not popular. Function keys are small, paging keys are operated using a shift key, and cursor arrow keys are in an L shape.

Design: The LTE weighs slightly less than eight pounds and has true notebook dimensions: 8½ by 11 by 2.2 inches.

Battery life: Battery life averaged close to three hours.

Value: Compaq recently chopped the retail price from $6,499 to $4,399 for an LTE with a 30M-byte hard drive. If the price cut reaches end users, there is little fault left to find in the system.

Compaq Computer Corp.'s LTE 386S/20

Reviews	Performance	Ease of use	Design	Battery life	Value	Score
[illegible] 3/4/91	Excellent	Very good	Very good	Good	Good	7.7*
PC Week 3/3/90	Good	Satisfactory	Satisfactory	Satisfactory	NC	Desktop features
PC [illegible] 3/12/91	Fits the bill	Solid	NC	NC	Premium price	Editors' choice
Users						
[illegible]	Good	Fair	Very good	Good	Good	NC
Dan Pennacchio, Pitney Bowes, Inc.	Very good	Good	Very good	Very good	Very good	NC
[illegible] Electronic Data Systems Corp.	Very good	Fair	Good	Good	Good	NC
Analysts						
[illegible]	Very good	Very good	Fair	Very good	Fair	Priced too high
George Thompson, Datapro Research Group	Very good	Good	Very good	Good	Good	Complete machine
[illegible] The [illegible]	Very good	Very good	Very good	Very good	Fair	Best performer

Key: Very good, Good, Fair, Poor. Reviewer evaluations are excerpts from articles. Refer to actual reviews for details. User and analyst ratings are based on telephone surveys. NC: No comment. *Infoworld score based on 1 to 10 ratings.

Vendor financial ratings

Analysts	Long-term stability	Short-term performance
[illegible]	Fair	Poor
Eric Zimits, Rauscher Pierce Refsnes	Very good	Fair

Compaq Computer Corp. in Houston reported second-quarter profit of $22.6 million compared with $104.3 million in first-quarter 1990. Revenue was down 15% to $733 million compared with $862 million in 1990

Compaq responds

John Sweney, spokesman:

Ease of use: Users said the L-shaped cursor key layout was a reasonable trade-off to keep the form factor and the full-size keys.

Value: There is a price to pay for extraordinary performance, compatibility and ruggedness. It is not a commodity market. But the street prices have dropped dramatically for these systems.

TI's Travelmate: Small size without sacrifice

Texas Instruments, Inc.'s Travelmate 3000

Reviews	Performance	Ease of use	Design	Battery life	Value	Score
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Fair	7.0*
PC Week 1/28/91	Didn't "wow" lab	Good keyboard	NC	NC	NC	Winning features
[illegible]	[illegible]	[illegible]	[illegible]	Poor	Fair	Outstanding portability
Users						
[illegible]	Good	Good	Good	Good	Good	Good functionality
Sheldon Laube, Price Waterhouse	Very good	Very good	Very good	Fair	Very good	NC
[illegible]	[illegible]	[illegible]	[illegible]	NC	Poor	Information available
Analysts						
[illegible]	[illegible]	[illegible]	Good	Good	Fair	Mixed reviews
Joe/Ann Stahel, Storeboard/Computer Intelligence	Very good	Very good	Very good	NC	Fair	Pricey
[illegible]	Good	Good	Good	Good	Good	NC

Key: Very good, Good, Fair, Poor. Reviewer evaluations are excerpts from articles. Refer to actual reviews for details. User and analyst ratings are based on telephone surveys. NC: No comment. *Infoworld score based on 1 to 10 ratings.

Vendor financial ratings

Analysts	Long-term stability	Short-term performance
[illegible]	Fair	Poor
Vince Glinski, Labe Simpson & Co.	Poor	Fair

Texas Instruments Inc. in Dallas had a net loss of $54 million for the first quarter of 1991. In 1990, the company had a profit of $13 million. Revenue for the quarter increased 7% from $1.54 billion to $1.65 billion.

Texas Instruments responds

Vaughn Watts, engineering manager, and Nasir Ahmed, marketing manager:

Ease of use: The magazine that said the keyboard is "mushy" said that the exact same keyboard was great in a review of a different model.

Battery life: You can set video parameters and use built-in utilities to extend battery life.

Not everything is bigger in Texas: The Travelmate 3000 from Texas Instruments, Inc. weighs a scant 5.8 pounds and stands less than two inches tall. Reviewers found that the Travelmate makes remarkably few sacrifices to stay slim.

Performance: The notebook, powered by a 20-MHz Intel Corp. 80386SX chip, registered good scores in speed tests, although it did not lead the pack. Drive access times are very good, reviewers said.

Ease of use: The Travelmate's edgelit screen won praise for overall clarity. However, the keyboard earned a "poor" rating from *PC World* for small function keys and a "mushy" feel.

Design: At 5.8 pounds, the Travelmate weighs less than most of its 386SX competitors, even with an optional modem included. The system measures 8.6 by 11 by just under 2 inches.

Battery life: The Travelmate cuts clock speed back to 10 MHz to save power when running on the battery. At either 10 or 20 MHz, however, battery life tested at less than two hours.

Value: While it is not the fastest or most rugged portable, TI's notebook, priced at $3,199 with a 20M-byte hard drive, is a strong competitor because of its excellent portability and respectable speed, reviewers said.

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BIT BLAST

AT&T gear to Kuwait

AT&T has reportedly delivered to Kuwait $7 million worth of communications equipment that the country's Ministry of Communications ordered less than 60 days ago to help the war-torn country restore telephone service. AT&T said it will also install and maintain the two 5ESS central-office telephone switches and the earth station shipped to the ministry.

Spurring ease of development for **Novell, Inc.** Netware networks, Austin, Texas-based **Syscorp International** is currently selling its personal computer-based Netware applications generator, Microstep Version 1.5, for $2,495 rather than its usual $7,500 to Netware customers and Novell resellers. Version 1.5 allows users to build Netware 286, 386 and Btrieve applications graphically without writing any code.

West Coast companies looking for backup networks will have more choices by virtue of an interconnect agreement between alternative local telecommunications carrier **Teleport Communications Group** and **Pacific Bell**. The Teleport San Francisco subsidiary's local fiber-optic network will link to a Pacific Bell central office in downtown San Francisco.

3Com users see unclear future

Company's 3+ Open deal with Microsoft changes the rules on customers

BY JIM NASH
CW STAFF

Six months after 3Com Corp. handed its LAN Manager-based network operating system, 3+Open, back to Microsoft Corp., 3Com user groups are still wondering what the switch means for them.

The mood among 3Com user groups could best be described as uncertain. Some thought regional user organizations would become stronger as vendor support for existing 3+Open systems eventually ebbs. Others said members will merely concentrate on 3Com's new strategic direction: internetworking.

More, however, have spent their meetings complaining about how the 3+Open deal came down. A few contemplated disbanding because most members will either move up to LAN Manager or switch to competing systems from Novell, Inc. and Banyan Systems, Inc.

"Our group is not disbanding," said Willy Pan, leader of the Houston 3Com Users Group, a subset of the 10,000-member Houston Area PC Users' Group. In fact, Pan said, "there's a 50-50 chance that the 3Com group will strike out on its own" this year.

3Com, based in Santa Clara, Calif., decided late last year to staunch the losses it said it was incurring by licensing its own brand of LAN Manager. It was generally known, group leaders agreed, that 3+Open sales were flagging. But Pan said he and his group were shocked that Microsoft would completely absorb 3+Open.

Similar questions

Bill Riess, supervising engineer at Commonwealth Edison Co. in Chicago, said the local user group there reacted similarly. While Pan's group was independently formed, the Chicago chapter was organized and is run by local 3Com sales staff, according to Riess.

He explained that before the change, the group was focused purely on 3+Open and the features 3Com was designing for it. Since then, members have used the meetings largely to reach an understanding of practical issues such as how support would be handled and who would supply what features.

Riess acknowledged that many of the members are still confused about these issues. Members of the Albuquerque, N.M., group are also scratching their heads, said Glenn Perkal, vice president and co-owner of reseller High-Tech Associates. Perkal, who is the de facto leader of the loose organization, said members still do not understand even who they should buy LAN Manager from.

As understanding increases, Riess said, group discussions

Continued on page 58

Study predicts future growth in data services

BY ELISABETH HORWITT
CW STAFF

PARSIPPANY, N.J. — Carriers' efforts to snag a major portion of the burgeoning enterprisewide data communications market will be largely successful over the next few years, according to a recent report by Insight Research Corp., based here.

The data communications market is expected to grow at a rate of 25% per year for the next few years, while carrier-based switched data services will increase their revenue by 45% per year, according to the research firm.

However, emerging switched digital services such as Integrated Services Digital Network (ISDN) and frame relay will account for a comparatively small percentage of those market gains, leaving a huge portion of revenue to be accounted for by the old switched analog services, Insight said.

"An awful lot of data is still being sent via modem over the analog network and over voice-oriented services like Megacom and WATS," Insight President Robert Rosenberg said.

Indeed, the switched analog data services market will account for about 78% of the total switched data services market this year and will still make up 56% of switched services revenue in 1996, Insight predicted.

PCs play large role

The driving force for analog switched services is the huge number of personal computers now equipped with modems as well as the large number of terminals, such as automated teller machines and credit-card verification terminals, that currently use the regular telephone network, the report said.

Public packet-switched services based on the CCITT X.25 standard make up the next biggest growth factor in the switched data services market, Insight said. Such services will bring in revenue of $932 million this year and $3.2 billion in 1996, according to the report.

While packet-switched services do not go back as far as analog switched offerings, they have had more than one decade for the technology to mature and establish a firm, broad user base.

In contrast, switched data digital services were virtually

Continued on page 54

Not to be forgotten

A large portion of the growing switched data services market will continue to be analog transmissions

Source: Insight Research Corp.

CW Chart: Doreen St. John

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FM radio waves take on data role

BY JOANIE M. WEXLER
CW STAFF

If the resource is there, why not use it?

That is the philosophy of several firms improving their communications turnaround time by piggybacking data onto FM radio airwaves via service and equipment from Salt Lake City-based Mainstream Data, Inc.

Mainstream operates a 19.2K bit/sec. nationwide data broadcasting network that allows its customers to disseminate time-sensitive information — such as financial data and news — from a single source to printers at multiple sites. Mainstream sublets leftover FM bandwidth from 13 nationwide radio stations and resells it in 300 to 2,400 bit/sec. chunks for about $50 per month per site, including receiver hardware. Receiving satellite dishes at the radio stations link to a satellite backbone.

While about 80% of Mainstream's customers are in the financial services industry — Dow Jones & Co., Telerate Systems, Inc. and Knight-Ridder Financial-Americas — innovative applications have emerged in other firms needing a quick, inexpensive way of shipping a message to many sites simultaneously.

For example, Breakdown Services Ltd. in Los Angeles is broadcasting synopses of television commercial scripts and talent requests to casting agents in 120 sites. The demand for actors is usually only one day, requiring quick communications with many sources at once, explained Peter Weiss, executive vice president at Breakdown.

Weiss said Breakdown's previous modem-based system — still used as a backup — required a telephone call to each site, while the Mainstream approach involves just one call to many locations. With the modem-based system, Breakdown not only had to pay for each call, but "at our peak times between 10 a.m. and 2 p.m., the system could back up," Weiss explained. "Now, our volume is up because everyone gets the message at the same time. We can do more business."

Helping various industries

Allied Information Networks in Kelseyville, Calif., is reselling the FM service for $100 to $500 per month. The firm operates separate networks catering to farm, truck and construction equipment dealers.

"If a dealer doesn't have a part, he can type in a message to be received by all parties who might have it, or he can send one message directly to another dealer, say, with a confidential price quote," explained Eric Shaul, vice president of sales and marketing.

The Mainstream approach has replaced an overnight 800 dial-up service that required the company to manually compile a list of needed parts during the day and a personal computer to dial up each customer with the requested information at night, Shaul said.

"The bottom line is that now we're providing a more valuable service so we can charge a lot more for it," Shaul said.

He and Weiss both emphasized the expandability inherent in Mainstream receivers, because it allows "nearly unlimited addressing options," Shaul said. "This means we can continue to grow our business."

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Data services

CONTINUED FROM PAGE 51

nonexistent in 1989 and will only reach $2.7 billion in revenue in 1996. This makes up less than 10% of the total 1996 switched data market, Insight said.

The above market is composed of ISDN and non-ISDN services. ISDN, the emerging standard for digital transmission of voice, data and video, will account for $59 million of the switched data digital market this year and for $1.5 billion in 1996, Insight predicted. The market will begin to take off around 1993, when local carriers are expected to begin offering the technology throughout their networks and user base.

Led by AT&T, the three leading interexchange carriers began introducing non-ISDN high-speed switched digital services about one year ago. Current offerings support speeds of 56K, 64K and 384K bit/sec., with 1.5M and 45M bit/sec. links expected by year's end, Insight said.

Frame-relay services, yet another emerging high-speed switched digital offering to emerge in the past couple of years, is expected to bring in $1.4 billion in 1996. One factor that clouds the future of frame relay is the lack of firm commitment on the part of carriers such as AT&T to introduce such services, Rosenberg said. The local carriers in particular have come out much more strongly for Switched Multimegabit Data Service, which uses the carrier's central-office switch as a hub for interconnecting multiple user sites at high speeds.

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3Com

FROM PAGE 51

are again turning back to 3Com's agenda, and this time they are centered on internetworking products. The consensus in the group is to stick with 3+Open and LAN Manager and to hold the group together.

Pan explained that most of his 40 or so active members "pretty much intend to migrate to LAN Manager." Pan is a software specialist at Honeywell, Inc.'s Industrial Automation Control Division.

A New Orleans user group has apparently dissolved. The leader of that group no longer works at Ochsner Medical Institutions, and his replacement, network manager Eric Castillo, said he is unaware of any such organization in the area.

What is more, Castillo said he is unlikely to create such a forum. Ochsner had been ready to upgrade from 3+Share to 3+Open when 3Com's announcement was made. Upgrade discussions came to a halt, Castillo said, and talk of jumping to Novell Netware surfaced.

"There is a close look at the offerings in the works," he said, "and it is not positive" for 3Com. Riess said 3+Open's primary attraction was that companies could pick up LAN Manager with 3Com additions for basically the same price as Microsoft's vanilla LAN Manager.

Migration questioned

Price and options are not the only considerations, Castillo said. "No one has convinced me that migrating to LAN Manager 2.0 is going to be painless." He said he has 500 users on a network that operates 24 hours per day every day. If migrating will disrupt things at all, why not make the jump to Netware altogether, Castillo said, describing managers' discussions so far.

Perkal said members of the Albuquerque group may disband. They are unhappy with 3Com for not being able to sell 3+Open, and they are mistrustful of Microsoft's promises. Redmond, Wash.-based Microsoft has said it will provide a migration path for 3Com users.

"Microsoft hasn't delivered on some promises in the past," Perkal said, citing the company's controversial about-face on co-development of OS/2 with IBM. "If they can't deliver on that for IBM, are they going to be able to deliver on 3+Open?"

3Com has closed "two or three U.S. offices," said Bob Finocchio, executive vice president of 3Com's field operations, but he said he has no plans to close any more. The closures are not a retreat by 3Com, he said, and have "had no impact on customers."

Finocchio said two of the offices closed were sales offices without support functions.

TCP/IP via Spectrum

ATLANTA — Spectrum Concepts, Inc. has found yet another way to extend the reach of its IBM LU6.2 file-transfer software, this time to the Transmission Control Protocol/Internet Protocol (TCP/IP) environment.

The New York-based software company and Carrollton, Texas-based Openconnect Systems, Inc. announced last week at the Comdex/Spring '91 show here that they have achieved compatibility between Spectrum's Xcom6.2 software and Openconnect's Openconnect/APPC.

Openconnect's software is said to allow a system running TCP/IP networking protocols to communicate with LU6.2 systems over a TCP/IP network.

Openconnect/APPC achieves this by implementing a library of Advanced Program-to-Program Communications (APPC) calls on a TCP/IP system and then encapsulating the calls in TCP/IP protocols so they can travel over the TCP/IP network, according to an Openconnect spokeswoman.

The agreement with Spectrum further extends that communications environment because Spectrum's Xcom6.2 file-transfer software runs on a variety of non-IBM systems.

ELISABETH HORWITT

Software may bring PCs PBX function

BY JOANIE M. WEXLER
CW STAFF

BILLERICA, Mass. — The sluggish ISDN market may soon receive a shot of adrenaline if software announced recently by start-up firm Unifi Communications Corp. technically matches its marketing claims.

Although still in the pilot stage, the Phoneserver platform and accompanying Distributed Call Center application software are ambitious in their aim to replace expensive proprietary call routing and management hardware, such as automatic call distributors and private branch exchanges (PBX). The software could eventually end Integrated Services Digital Networks' (ISDN) decade-long search for a major application, analysts said.

Unifi's software runs on Unix-based Intel Corp. 80386- and I486-based personal computers and uses ISDN's intelligent signaling channel to route and manage calls anywhere in a public-switched telephone network supporting Basic Rate Interface — 144K bit/sec. — ISDN. Basic rate ISDN is available today in 20% to 25% of regional Bell operating company central offices, according to Stamford, Conn.-based Gartner Group, Inc.

The Phoneserver platform is a convenient and cost-effective alternative to traditional switching equipment that "binds call-processing functions to the geographic location of a switch," said Bill Flood, director of customer services integration engineering at Illinois Bell Telephone Co., where the software is being tested. So far, Flood said, "the technology is being proven. It works fine with the [AT&T] 5ESS switch," and the carrier plans to begin compatibility testing in the near future with the Northern Telecom, Inc. DMS-100 central office switch.

Illinois Bell — a pioneer in ISDN service — said it plans to use the software for internal telecommuting applications and as a drawing card for would-be customers of its ISDN service. "The software allows us to free our service and repair representatives from their physical locations because calls can be switched anywhere in the network," Flood said.

Unifi's president, Robert L. Pokress, explained that the software "gives users what they've been asking for all along: the ability to control telecommunications applications through the public network without having to own any switching equipment."

Trading hardware for software, said Joseph Baylock, program director of enterprise network strategies at Gartner Group, is a current trend that affords savings in floor space and power and provides added flexibility and investment protection.

In addition, according to Pokress, "any user who can point and click" can program customized call routing applications.

The idea behind Phoneserver — and applications such as Distributed Call Center that sit on top of it — is similar to that of IBM's Callpath, which links IBM host-resident databases with PBXs. The Phoneserver approach, however, turns the public network into the switching resource, letting the application link to multiple dispersed databases across a wide area.

A quick look

The particulars of Unifi Communications Corp.'s Phoneserver include the following:

PRICE

$65K for Distributed Call Center with bundled Phoneserver; $50K plus royalties based on deployment size for Phoneserver and basic development package

REQUIREMENTS

ISDN basic rate service from local telephone company; Basic Rate Interface card on all integrated PCs; 2M bytes of RAM on desktop; SCO Unix 386 and above PCs

SHIP DATES

Early ship program second half 1991; general availability 1992

CW Chart: Doreen St. John

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THE CEO VIEW

Outsourcing is it at Diesel Technology

CEO Derek Kaufman has strong opinions about information systems and business

BY NELL MARGOLIS
CW STAFF

For Diesel Technology Corp., outsourcing is more than just the optimal way to run information systems — it's the only way the company has ever known.

When the manufacturer of electronic and mechanical fuel injectors hired young Derek Kaufman as president in 1988, it was at a crossroads in several respects. Formed when Penske Transportation bought the diesel fuel injection business of General Motors Corp.'s AC Rochester, Mich., Division, Diesel Technology was suddenly an independent $48 million business. At the same time, customer demands on the fledgling Grand Rapids, Mich.-based firm were changing and intensifying.

Diesel Technology needed a sophisticated manufacturing, resources and business planning system to replace its mainframe time-sharing arrangement with its former divisional owner at an annual cost of about 3% of Diesel'a revenue. Kaufman considered setting up an internal IS operation but instead signed a long-term outsourcing agreement with Electronic Data Systems Corp.

The 39-year-old Kaufman has strong opinions on outsourcing and on some of the ways in which IS and the computer industry have failed to meet business expectations in the past:

On what sparked his awareness of IS as a key element of the company's business strategy:

"Analyzing our cost structure made us aware of IS. We're a 95% vertically integrated company. This has real pros from the quality control standpoint, but there's a downside, too. Inventory, overhead and flow control problems can get — I think the word I'm looking for is *horrendous*.

"We're looking to expand into new economies and countries. So the question becomes, what do we do to build a launchpad for this kind of company? We can improve the quality of the product, and we can create a cost structure that will promote expansion and growth. Information systems like the MRP II can help with the first. The second points to systems integration."

On the outsourcing decision:

"We asked, what do we do best around here? What do we do not so well that someone else does very well? The answer that kept coming back to us was, 'We're very good at making fuel system componentry. We ought to maximize the focus of every single person here on that.'

"Our first thought was to form a giant, internal IS department. Well, I knew we could do that — at [a former post], we formed almost a company within a company. I knew enough about the computer world to make me dangerous.

"We started down that path — we contracted hardware and software suppliers, and they started coming in the door. But we needed CAD and workstations and a full range of software, and I began to notice that each of the vendors was coming in with consultants in every one of the other specialties. Well, we've only got a few conference rooms here.

"With a systems integrator, we get a well-defined expense item on our ledger in return for buying power that a company this size ordinarily wouldn't have."

On traditional barriers between IS and business:

"When EDS approached us with their proposal to run our [IS] crew, one of the advantages I saw was that we could eliminate the "gray zone" of an IS department without throwing away the benefits of the technology. I think you can get whipsawed by all that information locked up in that one department of a company.

"The IS world has worked well to develop its own language, and what you see is eyes glazing over when the IS folks are talking. What excites me is, as software becomes more sophisticated, we're almost back to English! That'a really where you want to be. You don't want sophistication to become a barrier.

"I have a sense that, improperly used, control of information within a company can overshadow the interpersonal relationships that are what really keep a company going. I've seen places where that has happened."

On the role of systems integrators compared to systems vendors:

"The whole implementation of a system is — or should be — based around people. And here, the people were what I'd call 'system averse.' They didn't want *any* system. Efforts to get around having one ran pretty high. Old system, new system, any system, the reaction was: 'I don't like it.'

"Meanwhile, from the hardware vendors, the idea we're getting is that a box is going to be dropped off with a stack of software and two manuals and a rep who will be around for a day or two; after that, good luck, you're on your own.

On the CEO's role in IS:

"The chief executive officer has an absolute ability to kill the implementation of change by simply being not interested. It's easy to do; I have 900 things on my plate at any given time that I could put ahead of IS. What is important to realize, though, is that the guy who wants to talk to me about it also has 900 things to do. [Penske Transportation CEO] Roger Penske has a $2.5 billion company to run — and yet, I know that I have instant access to him. If he has the interest and involvement, who am I to have less?"

Peter Yates

DIESEL TECHNOLOGY CORPORATION

The CEO: *Derek Kaufman, 39; Bachelor's degree in mechanical engineering, General Motors Institute; married, five children*

The career: *President of Diesel Technology Corp., 1988-present; vice president of marketing, Freightliner Corp., 1984-1988; vice president of product support, director of marketing and other positions at Euclid, Inc. (subsidiary of Daimler-Benz AG), 1978-1984*

Accomplishments: *Increased Diesel Technology revenue from $48 million to $70 million in two years; led implementation of MRP II and workstation-based computer-aided design systems; increased inventory accuracy from 40% to 90%; quadrupled inventory turnover*

INSIDE

▶ Merrill Lynch's DuWayne Peterson speaks on "implementing a vision" at a recent UCLA-sponsored symposium. Page 64.

▶ Book review: Gerard H. Gaynor's *Achieving the Competitive Edge Through Technology Management.* Page 66.

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TAKE ADVANTAGE OF CHANGE℠

IS executives must put their vision to work, speakers urge

BY GLENN RIFKIN
SPECIAL TO CW

LOS ANGELES — Top business executives are scrutinizing the information systems function now more than ever — and in many cases, IS is not bearing up well.

This trend has become an added impediment to the IS executive's ability to foster and follow a strategic vision, retiring Merrill Lynch & Co. Executive Vice President DuWayne Peterson told an audience of 200 Southern California IS professionals at a symposium earlier this month.

"You can't just talk about vision," Peterson said at the symposium, which was sponsored by the Information Associates program at the University of California at Los Angeles' Anderson Graduate School of Management. "You have to be able to implement it. That's what we're getting paid for."

Peterson, echoing an oft-heard sentiment at the symposium, added that chief information officers cannot be expected to bear the brunt of the technology vision alone. "Chief executive officers have to get off their butts" and get involved in computers, Peterson said. It is not enough for a CEO to deliver canned speeches about the importance of technology, he noted.

Merrill Lynch's *Peterson: CEOs must push technology*

"The key to partnering with business units is fostering a mutual respect [between IS and the users]," he said. "And that starts with the CEO."

IS executives who want to foster a technology vision for their firms must occupy a strong and visible position within top management, and there is no formula for establishing such visibility, Peterson said. "It's just plain hard work showing people that you know what you are doing, building relationships," he said.

The symposium included a keynote speech by Max Hopper, senior vice president of IS at American Airlines Co. In addition to Peterson and Hopper, CIOs at other Los Angeles-area corporations, including MCA, Inc.'s George Brenner, Southern California Edison's John Fielder and Bergen Brunswig Corp.'s Anthony Vallario, offered advice on forming an IS vision for the 1990s.

Hopper said creating a vision simply means solving a business problem. He described the work of Robert Noyce, co-inventor of the integrated circuit.

"He changed the world, but he was only trying to solve a business problem," Hopper said. "There are no magic wands we can wave to create a vision. It results from looking in all the likely and unlikely places for solutions."

Hopper suggested that leaders often become visionaries after the fact. In heading the development of American's Sabre reservations system, "I wasn't trying to be a visionary; I was trying to solve our business problems and the travel agents' business problems," he said.

Lunchtime ideas

Hopper recalled that American's Aadvantage program, the first-ever frequent-flyer program, was born "on a buffet line in the cafeteria of our flight attendants' training center." He and AMR Corp. Chairman Robert Crandall were standing in line for lunch and discussing ways to take better care of American's business customers. Another IS executive suggested combining two just-completed electronic tracking systems into a program to track customers' mileage.

"We diagrammed it on a napkin, set up a task force and six months later sprung it on the industry," Hopper said. "No one was able to match us."

Peterson, drawing from his 30 years in the IS field (he is due to retire on June 18), laid out a blueprint for both technical and organizational success in what he called a difficult time for IS. "How do you give better service and drive down costs at the same time?" he asked.

He described how he has cut Merrill Lynch's IS budget from $1.5 billion to $1.2 billion since 1987 while rolling out 17,000 personal computers to 500 locations within the firm. "It was painful," Peterson stated, "but it's paying big dividends now." The vision, he said, was based on making Merrill Lynch "the easiest financial services company to do business with."

Technical issues are buffeted by organizational issues as well, Peterson added. An organization must be open and fair and must allow people to fail. "The worst thing is a culture where people who fail are killed and thrown out the door," he said. "You have to be able to learn from the failure."

Rifkin is a free-lance writer and a former *Computerworld* features editor.

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BOOK REVIEWS

A pep talk for technology managers

Achieving the Competitive Edge Through Integrated Technology Management
By Gerard H. Gaynor
McGraw-Hill, Inc., $46.50

Business professionals are faced with decisions every day: Company A introduces a new technology, while Company B upgrades a model your company is currently using. Company A claims its new machine can serve you better. How do you decide?

Hypothetical dilemmas are sprinkled throughout Gaynor's book. The 294-page book is a guide to how workers at all levels can avoid the trap of losing money while implementing new technologies.

The book addresses basic problems of technology management, beginning with a definition of *technology*. The word itself conjures up images of complex issues, but managers must learn that technology can include any simple idea that helps accomplish a certain task.

Another problem, the author says, is that there is a love-hate relationship with new technology. While many managers may want to improve their operations, fear of the unknown creates a degree of tension when it comes time to make a decision.

The book concentrates on what the author calls "priority issues" for wise technology management. Before deciding on a new technology, many simple areas need to be reviewed, including planning, strategy and market study. Such obvious things are often forgotten, he says.

Most important, the author stresses, is not to ignore any particular area in a business. At some corporations, an effective plan can be wasted if managers and workers are not properly trained to execute a plan. By the same token, an effective staff can be wasted by poor planning.

The book closes by raising issues related to actually making the transition to a new technology once it has been decided upon. Although there is no sure way to make a smooth transition, Gaynor devotes three chapters to basic principles that can be applied in most business environments.

Gaynor's presentation of priority issues is clear, but practical examples that could make the book more enjoyable are missing. With his 35 years of experience in the technology management field, Gaynor could have reinforced his theories with some real-life situations. Basic graphs do help the reader along in some areas, but they are used sparingly. Gaynor's ideas are insightful, yet those looking for more visual aids will find the reading a bit monotonous and tiring at times.

STEVEN J. CONDON

Build Your Own 80486 PC and Save a Bundle
By Aubrey Pilgrim
Windcrest Books, $16.95

Do-it-yourselfers, gather round! Aubrey Pilgrim tells how, with a small amount of elbow grease, you can build a personal computer using the very latest Intel Corp. chip set — and at a small fraction of the cost of even the "no-name" brands advertised in the back of PC magazines.

Pilgrim's writing and descriptions are concise and come with estimates of what the PC builder can expect to pay and where to get various pieces of system hardware. Actually, the nuts-and-bolts descriptions of the assembly, which takes less than an hour if you have all the parts on the table, and the accompanying black-and-white photographs occupy only a few chapters.

The timid may not follow this pilgrim, but those who do could save $2,000 to $5,000.

ELLIS BOOKER

The Next Century
By David Halberstam
William Morrow & Co., Inc., $16.95

"The Cold War is over. The Japanese won."

That quote sets the tone early on for Halberstam's latest effort, a tightly-written, 126-page book that provides ample food for thought. The book examines the post-World War II legacies of the U.S., Japan, the Soviet Union and Eastern Europe and urges Americans to wake up to the economic and social realities of their nation in decline.

Halberstam is better known for 800-page tomes such as *The Best and the Brightest* and *The Reckoning*, but *The Next Century* offers eloquent observation and insight into the forces that have shaped our current precarious position in the global economy. He argues that U.S. political dialogue and policy must shed its Cold War clothing and address the real threats to our world leadership: our deteriorating education system and economic focus on financial manipulation rather than core industry.

CLINTON WILDER

Condon is a *Computerworld* copy editor, Booker is Midwest bureau chief, and Wilder is senior editor, management.

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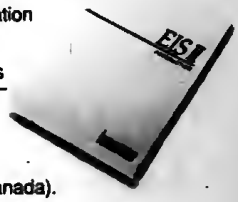

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*David W. DeLong, co-author of "Executive Support Systems: The Emergence of Top Management Computer Use."
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The opening speaker will be Mark Baker, president and chief executive officer of BT North America, Inc., who will discuss the globalization of intelligent networks. The keynote speaker will be Eric Schmidt, president of Suntech Enterprises, Inc. He will discuss strategies and developments for integrating networks and computers into client/server computing.

For information or to register, contact IDG Management Group, Framingham, Mass. (508) 879-6700.

JUNE 16-22

National Educational Computing Conference. Phoenix, June 16-20 — Contact: Southwest Events, Scottsdale, Ariz. (602) 991-5131.

Downsizing in the Computer Industry: Making the Migration from Reliance on Mainframe to Distributed Processing in the Mini, PC and LAN Environment. New York, June 19-20 — Contact: Institute for International Research, New York, N.Y. (212) 826-1260.

Intelevent '91. Hong Kong, June 19-20 — Contact: International Televent, McLean, Va. (703) 556-7778.

Supercomputing 1991 USA/Pacific. Santa Clara, Calif., June 19-21 — Contact: John Derryberry, Angus & Rudin, Inc., Redwood City, Calif. (415) 363-0982.

Document Image Processing Symposium. Toronto, June 20-21 — Contact: C. J. Howe, Price Waterhouse, Toronto, Ontario (416) 863-1133.

JUNE 23-29

Structuring Business Partnerships for Competitive Advantage. Laguna Niguel, Calif., June 23-25 — Contact: AMR International, Inc., Greenwich, Conn. (203) 661-0101.

Scoop East Conference. East Rutherford, N.J., June 24-27 — Contact: Bob Daniels, Boston University Corporate Education Center, Tyngsboro, Mass. (508) 649-9731.

Test Engineering Conference. Atlanta, June 24-27 — Contact: Miller Freeman Expositions, Boston, Mass. (617) 232-3976.

International Windows 3.0 Developers Conference. Santa Clara, Calif., June 24-28 — Contact: Andree Fontaine, Boston University Corporate Education Center, Tyngsboro, Mass. (508) 649-9731.

Taking Control of the Future: The Role of Information Management in Business Reengineering. Nashville, June 25 — Contact: Lisa Gibson, Computer Corporation of America, Cambridge, Mass. (617) 492-8860.

Micro '91: Auditability, Security and Productivity of Micro-based Systems. Boston, June 25-27 — Contact: Pamela Bissett, MIS Training Institute, Framingham, Mass. (508) 879-7999.

Multimedia '91. London, June 25-27 — Contact: Arielle Manquet, NGA, London, England (011-44) 081-742-2828.

PC Expo. New York, June 25-27 — Contact: Mark A. Haviland, Bruno Blenheim, Inc., Englewood Cliffs, N.J. (201) 569-8542.

Hammer Forum and Clinic '91. Boston, June 26-28 — Contact: Hammer and Co., Cambridge, Mass. (617) 354-5555.

Independent Computer Consultants Association National Conference. Seattle, June 27-29 — Contact: Carolyn Kerstitz, Independent Computer Consultants Association, St. Louis, Mo. (314) 997-4633.

JULY 7-13

Datapoint Users Group Meeting. Orlando, Fla., July 7-10 — Contact: Datapoint Corp., San Antonio, Texas (512) 593-7910.

OSF/Motif Graphical User Interface Toolkit: Fundamentals and Application Development. Los Angeles, July 9-10 — Contact: UCLA Extension, Los Angeles, Calif. (213) 825-1047.

International Conference and Exhibits on Failure Analysis. Montreal, July 9-11 — Contact: ASM Member/Customer Service Center, ASM International, Materials Park, Ohio (216) 338-5151.

Structured Development Forum. Portland, Ore., July 9-11 — Contact: Software Association of Oregon, Beaverton, Ore. (503) 690-1395.

National ISDN — Working Together to Make It Happen. Washington, D.C., July 9-10 — Contact: Barbara Kaufman, Bellcore, Livingston, N.J. (201) 740-4324.

Engineering Workstations Conference. Boston, July 9-11 — Contact: EWC, Santa Monica, Calif. (213) 450-0500.

Geographic Information and Spatial Data Exposition. Washington, D.C., July 9-12 — Contact: Gadex, Silver Spring, Md. (301) 445-4400.

Sony Government Technology Exposition. Washington, D.C., July 10-11 — Contact: Sony Business and Professional Group, Montvale, N.J. (800) 877-7669.

APICS 1991 Total Manufacturing Performance Seminar. San Diego, July 10-12 — Contact: APICS Meeting Registration, Falls Church, Va. (703) 237-8344.

JULY 14-20

Guide 80. Boston, July 14-19 — Contact: Guide Headquarters, Chicago, Ill. (312) 644-6610.

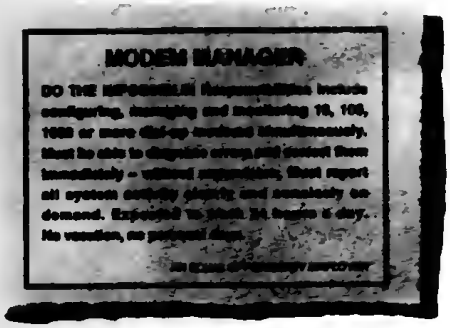
American Association for Artificial Intelligence National Conference on Artificial Intelligence. Anaheim, Calif., July 14-19 — Contact: AAAI-91, Menlo Park, Calif. (415) 328-3123.

TQM '91 Conference. Washington, D.C., July 15-17 — Contact: Paula Harrington, Society of Manufacturing Engineers, Dearborn, Mich. (313) 271-0777.

Video Expo. Chicago, July 15-19 — Contact: Debbie Rotolo, Knowledge Industry Publications, White Plains, N.Y. (914) 328-9157.

Computer Technology and Military Planning Symposium and Exhibition. Arlington, Va., July 19-18 — Contact: Automated Missions Planning Society, Palmyra, N.J. (609) 829-7823.

Information Engineering/RAD. Washington, D.C., July 19-18 — Contact: Technology Transfer Institute, Santa Monica, Calif. (213) 394-8306.



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10BASE-T NETWORK MANAGEMENT MADE EASY.

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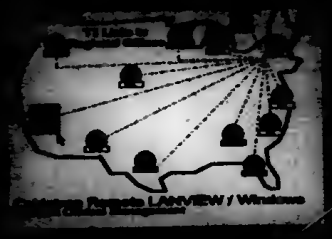
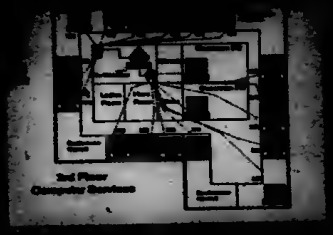


FAULT LOCATED-3rd FLOOR



DISPLAY HUB STATISTICS

DISPLAY PC CARD STATISTICS

Ethernet Token Ring

Still up in the air

Interconnected LANs make integrated network management even less possible, but standards and vendor alliances bring some pieces together

BY JULIA KING

You can't blame Lori Steinmetz for wanting something he can't have.

What he wants is one system to manage a complex internetwork of Ethernet, Digital Equipment Corp. Decnet and Apple Computer, Inc. Appletalk local-area networks, linked by bridges from DEC, Cabletron Systems, Inc. and 3Com Corp., for a total of 13 segments, with well over 500 nodes. What he wants is an integrated network management system.

To Steinmetz, data network manager at *The Christian Science Monitor*, an integrated network management system would be a central repository for all network data, including statistics, status reports, alarms and historical data. Optimally, he would access this information via a single console, while network operators stationed at consoles in several different areas would also have simultaneous access.

That kind of system is simply not available. Despite vendors' claims to the contrary, integrated network management does not exist today. No single system can manage the entire sprawl of interconnected, multivendor, multitechnology LANs many companies are contending with.

Piecing it together

That's not to say vendors aren't trying. They are, especially through alliances with each other (see story page 74) and compliance with emerging standards. "What we have is a mishmash of disparate tools looking at separate pieces of the LAN puzzle," says Jill Huntington-Lee, an editor and analyst at Datapro Research Group in Delran, N.J. "The good news is there are a few emerging trends that indicate some glimmer of consolidation."

Right now, the brightest glimmer emanates primarily from the continual refinement — and growing industry acceptance — of the Simple Network Management Protocol (SNMP).

SNMP — defined by the Internet Engineering Task Force for managing Transmission Control Protocol/Internet Protocol networks — provides a common format for network devices such as bridges, routers, concentrators and modems to communicate management data via an "agent" to the management station, or "host."

The management host can be either a Unix-based workstation or a Microsoft Corp. MS-DOS-based personal computer.

Currently, about 200 organizations are actively developing SNMP products, with about 70 vendors actually shipping or ready to ship products, Huntington-Lee says.

Most of these companies are offering "element management systems," which manage vendor-specific network devices. A growing group of SNMP management station vendors (see chart page 78), however, monitor any device equipped with SNMP agents on the network.

Despite the fact that SNMP has become a de facto standard in the industry, it is debatable whether the protocol will stand the test of time.

SNMP is viewed by some as a stopgap measure until the International Standards Organization/Open Systems Interconnect (ISO/OSI) network management protocol, called the Common Management Information Protocol (CMIP), is ratified.

CMIP adds a key function to network management that SNMP doesn't currently support: It allows communications among disparate network management systems. It is also more reliable than SNMP and addresses security concerns that the current protocol does not.

Stymied by the ISO's cumbersome approval process, however, CMIP has yet to be fully defined or embraced by either users or vendors, which have to date offered few CMIP tools. Both IBM and DEC have pledged allegiance to CMIP, however — something that can't be said for SNMP.

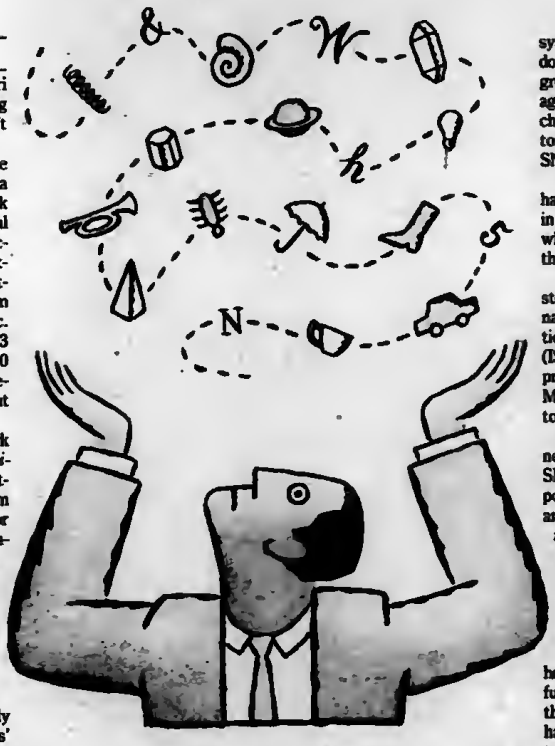
Support, not commitment

AT&T, DEC and IBM have shown some support for SNMP, but the standard still hasn't received complete endorsement from all the major vendors, particularly IBM.

IBM offers a handful of SNMP products, including a Unix package that monitors SNMP devices, but the company probably won't make a strong long-term commitment to SNMP, says Ray Williams, senior technical staff member at IBM.

What has grown out of IBM's dissatisfaction with SNMP is another proposed set of specifications that it jointly developed with 3Com. Called CMOL, or CMIP over logical link control, the protocol is intended to

Continued on page 72



James Steinberg

King is a free-lance technology writer based in Ridley Park, Pa.

INSIDE

Buyers' Scorecard
HP, Sun tie as users rate multivendor LAN managers. Page 76.

Product Guide
A listing of SNMP management stations. Page 78.

Outsourcing Alternative
Tips and guidelines to finding the right provider. Page 80.

Key questions

Consider the following questions before purchasing an SNMP management station:

▶ What kinds of proprietary management information base extensions are included in the product? Are they public information?

▶ Can the SNMP management station access and interpret management information bases from different vendors?

▶ Can it handle set commands and reconfigure networks, as well as monitor them? This depends largely on whether management information base extensions are available in read-only or read/write form.

▶ What kinds of alliances does the vendor have? What provisions are in place for interoperability with multivendor hardware and software?

▶ How much in-house effort is required to write access modules for equipment that doesn't support SNMP?

▶ How active is the vendor in the Internet Engineering Task Force's SNMP activities?

▶ Is the software reconfigurable to accommodate the CMIP standard and other standards as they evolve?

Continued from page 71

manage heterogeneous Ethernet and Token Ring LANS.

According to Huntington-Lee, however, it is unlikely that the CMOL specification will ever go head-to-head with either SNMP or the final ISO CMIP standard.

"Because CMOL runs over the logical layer, it can't see through routers as SNMP can," she notes. "So it's limited in terms of managing internetworks."

In the absence of another full-fledged standard, then, SNMP has gained a major market presence, and users and vendors alike work around its limitations.

SNMP variations

The main stumbling block to SNMP interoperability is that not all SNMP-based equipment is created equal. Many vendors of the element management systems place proprietary data in the management information base, which serves as the storage center for management data about the network device. Consequently, host software from another vendor may not be able to read or even display that network device's data.

Further complicating matters is the fact that most vendors don't make this proprietary data public.

As a result, companies with SNMP devices from a large number of vendors need to choose a management station that either supports proprietary management information bases or offers tool kits to write applications that can.

At *The Christian Science Monitor*, Steinmetz uses Lance, an SNMP management station from Micro Technology, Inc., to gather information from the firm's 3Com and Cabletron bridges and routers. Lance puts a "tap" on each network segment to be monitored.

"The bridges automatically send messages to the Lance system, so I get an immediate alert when a line is down," Steinmetz says. "We can be ahead of users instead of looking dumb when there is a problem."

What Steinmetz cannot do with Lance is monitor Decnet traffic. The same is true at Texas A&M University in College Station, Texas. Network planner Walt Magnussen has been beta-testing Spectrum Advanced Management System, a Unix-based platform from Cabletron.

Some consolidation

Spectrum receives data from various network segments via Cabletron's line of smart hubs, to which the segments are attached.

With Spectrum, Magnussen has been able to consolidate network data not only from the Cabletron concentrators on campus but also from a variety of other attached devices, such as bridges and routers from Cisco Systems, Inc. and 3Com.

However, he still has to contend with a large installed base of non-SNMP devices from DEC. For those devices, the university has installed a separate system — DEC's Decmcc Director — to monitor and control Decnet traffic and other equipment, such as LAN Bridge 100s.

This lack of support for non-SNMP devices is the second biggest problem with SNMP management products. It is possible to kludge together SNMP and non-SNMP equipment in the same management system using third-party software sets called proxies, says Bill Livingston, vice president of strategic systems at Network Management, Inc., a Fairfax, Va.-based systems integrator.

"But it's not an off-the-shelf solution," he says, adding that implementing a complicated system of proxies for incompatible network devices requires software engineering expertise that most managers don't have in-house.

A new class of management systems is emerging to tackle that problem. These systems are essentially development platforms with well-documented application programming interfaces that let users or third-party vendors write applications for a variety of management functions, including monitoring of both SNMP and non-SNMP devices (see Buyers' Scorecard, page 76).

The most mature products in this category are Openview from Hewlett-Packard Co. and Sunnet Manager from Sun Microsystems, Inc. IBM, DEC and AT&T also offer such products.

HP's Openview includes an open applications development environment, Openview Network Management Server, which is available in both DOS- and Unix-based versions. HP has pledged support for CMIP when it is fully defined.

Sun's Sunnet Manager consolidates management data at the user interface, which furnishes a consistent format for network information regardless of the type of network or device being managed or the protocols it uses, according to Brian Biles, the company's product manager for network management.

What may come as a disappointment to many users is the better-than-average chance that no single integrated system will ever emerge. For instance, even with an integrated monitoring capability, users still need a protocol analyzer to pinpoint which device using the proprietary protocol is causing a problem (see story page 75).

"Users won't solve their network management problems by just writing a check," says James Herman, a principal at Northeast Consulting Resources, Inc. What is necessary is to keep abreast of vendor alliances and establish a timetable for bringing in emerging technologies. ■

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The complete system

The following elements are necessary to build a comprehensive network management system, according to a 1990 report on network management hardware, software and services markets from International Resource Development, Inc., a market research firm based in New Canaan, Conn.:

- **A repository, or management information base:** A database of all pertinent information relating to managed network objects and their attributes. Unified repositories are key to providing truly integrated network management systems, but current repositories are largely proprietary.
- **Management elements:** Network management systems that exercise control over other systems and nodes on the network. Management elements monitor network performance and then collect network management data, process it and report on it.

  They can also take action, for example, by bypassing a network node deemed to be faulty. Management elements that sit at the top of network management system hierarchies are often referred to as "top managers."
- **Managed objects:** Network elements controlled by management elements.
- **User interface:** A system made up of software-generated menu trees, commands, network maps, color-coded alarms, test result formats and links among different, integrated network management systems applications.
- **Protocol suites:** Every system uses protocols, such as SNMP or CMIP, CMOT and CMOL, to initiate communications between management elements and managed objects.
- **Data structures:** Vendors use unique semantics and rules of syntax for their network management systems data and message formats. This is a primary barrier to interoperability among different network management systems.

  The OSI is standardizing abstract rules of syntax and semantics, which should lead to new levels of interoperability.
- **Diagnostic capabilities:** Every network management system must be able to provide loopback tests, report on analog signal attenuation, count digital line errors and more.

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Blueprints for enterprisewide network management systems

BY JULIA KING

At Millipore Corp. in Bedford, Mass., Joe McGrath is ready to up the ante in his demands for integrated network management.

McGrath, manager of corporate telecommunications, says a fully integrated network management system should be able to monitor and manage not only the interconnected local-area and wide-area networks but also the systems applications software tied into the network.

This ideal system, sometimes referred to as enterprise management, would pinpoint all potential sources of problems that manifest themselves on the network, whether or not they are directly related to the network itself.

McGrath is looking pretty far ahead, however: Most users are still focusing on connecting the LAN management systems they already have, according to James Herman, a principal at Boston-based Northeast Consulting Resources, Inc.

Even if users were ready for such enterprisewide network management, vendors aren't. IBM, Digital Equipment Corp. and AT&T have each proposed blueprints for enterprisewide network management systems, but for the time being, the systems remain in the "visionary" stage.

These systems propose to tie together all management systems, but so far, nobody is delivering products that can fully carry out these plans.

"Right now, we're still down in the plumbing of network management," Herman notes. "It will be 1993 before any set of comprehensive, robust solutions is available."

Pulling together

One way in which the vendors are moving toward fulfillment of their enterprise plans is by forming alliances with one another as well as with LAN vendors. What follows is a look at some of the key providers of enterprisewide network management equipment and their alliances:

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AT&T: To date, more than 50 vendors of network equipment have committed to providing interfaces to AT&T's Accumaster Integrator.

Some of these vendors include Banyan Systems, Inc. (Network Management System), Cabletron Systems, Inc. (Spectrum), Codex Corp. (9800 series Network Management System), General Datacomm Corp. (Megaview, Netcon and Megamux TMS), Infotron Systems Corp. (Integrated Network Manager), Network Computing, Inc. (Lanalert), Timeplex, Inc. (Time/View 2000 and 2500 systems and HUB communications software) and Verilink Corp. (Verinet system).

AT&T also published specifications earlier this year describing how vendors of SNMP-based equipment can convert SNMP messages to the Accumaster Integrator alarm interface specification. Automated Network Management, Inc., Kaptronix, Netlabs, Inc. and Network Computing have all agreed to implement this specification.

However, while AT&T's Accumaster Integrator product and Unified Network Management Architecture connect a number of elemental management systems that will manage AT&T equipment, "there is no connection with IBM's SNA," says Mike Howard, president of Infonetics Research Institute in San Jose, Calif.

IBM and AT&T have struck an agreement to exchange information between IBM's Netview — which manages its Systems Network Architecture (SNA) networks — and AT&T's Accumaster Integrator.

The SNA/Accumaster link will alternatively be provided through an agreement with Systems Center, Inc.

Systems Center and AT&T are also developing software to allow Systems Center's Net/Master, a Netview competitor, to exchange information with Accumaster.

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Digital Equipment Corp.: Approximately 22 vendors have announced their intention to support DEC's Enterprise Management Architecture (EMA), including 3Com Corp. and Vitalink Communications Corp.

Network management systems from these companies will be able to report to DEC's enterprise system. DEC's EMA also supports SNMP and will eventually support CMIP.

DEC suffers from the same SNA connectivity problem as AT&T. Like AT&T, DEC has a joint agreement with Systems Center that will link Decmcc Director, a portion of EMA, to SNA management via Net/Master.

Decmcc Director also offers windowing capability to IBM's Netview, allowing users to toggle between the systems from a single workstation.

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IBM: Approximately 60 vendors now support or have agreed to support Netview via the Netview/PC interface or via a direct link. Among these vendors are Banyan, 3Com, Synoptics Communications,

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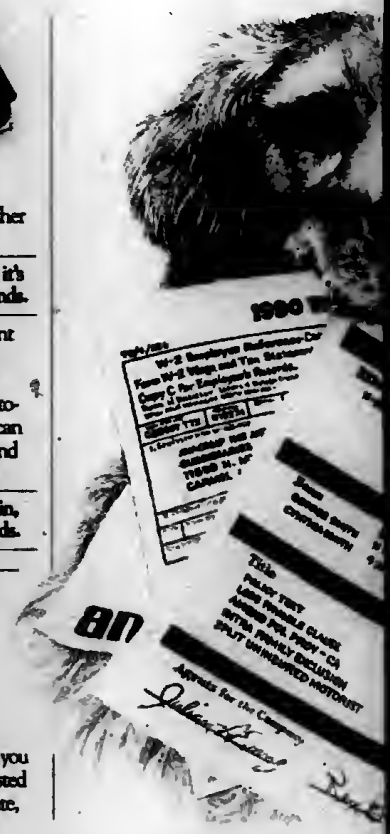

Inc., Ungermann-Bass, Inc. and Novell, Inc., as well as a wide range of telecommunications equipment vendors.

Companies such as TSB International, Inc. and, more recently, International Telemanagement Corp. have provided boxes that link other vendors' network devices to Netview.

IBM has also announced support for CMIP. Additionally, IBM and 3Com are working on a set of specifications based in part on CMIP for managing mixed Token Ring and Ethernet networks.

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Hewlett-Packard Co.: HP's Openview is a network management product line that now includes a Unix-based server for managing both HP and Transmission Control Protocol/Internet Protocol networks. Support of CMIP is in the works.

A growing number of network vendors have implemented HP's graphics-based user interface as the basis for their own management systems.

Recently, HP licensed portions of its Openview network management system for implementation on IBM's AIX-based RISC System/6000 network management platform.

The platform will initially manage both IBM's and HP's Unix-based workstations, giving IBM a network management presence in the growing number of installations with IBM hosts and distributed Unix-based systems.

The implication of the announcement is that systems from HP and IBM will be able to exchange management information, according to an HP spokesman.

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Cabletron: Cabletron is a relative newcomer to the enterprisewide management arena. Under an agreement signed earlier this month, the company will incorporate Touch Communications, Inc.'s Alliance Open Software Interconnect software into its Spectrum product line, giving Spectrum the ability to support the CMIP management protocol.

Cabletron also has agreements with several companies to tie into its smart hub. In effect, this will extend Cabletron's Spectrum system, which manages the hub. Cayman Systems, Inc. will integrate its Ethernet-to-Appletalk gateway technology into Cabletron's hub products, according to the company. •

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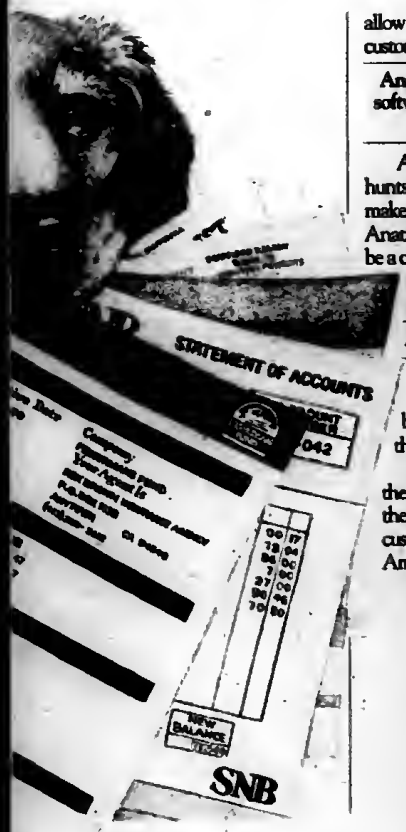

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This job calls for two

When you're managing a labyrinth of interconnected LANs, knowing that there is a problem and knowing what's causing the problem are two different things.

While future products will integrate those functions, right now you still need two separate tools. SNMP management stations take care of the first part, while protocol analyzers are the primary problem-deciphering tools.

"One product isolates the problem, and the other troubleshoots it," says Walt Magnussen, network planner at Texas A&M University in College Station, Texas.

Protocol analyzers allow a user to dig deeper into a reported problem by capturing data packets and decoding protocols to pinpoint the exact source of the error.

Vendors of these tools include Network General Corp., Spider Systems, Inc., Vance Systems, Inc., Protools, Inc. and Novell, Inc.

Protocol analyzers have historically worked under a segment-by-segment testing method. Today, however, vendors are working to integrate analyzers into the larger network management picture in two ways: by forging links to SNMP management stations and by allowing their products to remotely analyze multiple LANs simultaneously, analyzing those segments at a central console.

Two vendors, Network General and Spider, have tackled the latter method.

This ability to continuously monitor and distribute network data isn't cheap, however. Network General's Sniffer servers range from $4,995 to $10,995, depending on the applications and configurations. The Sniffmaster Console is priced at $7,995.

The Spider Monitor board kit sells for $8,600, and the remote software is $950.

Only a couple of protocol analyzers so far are able to send reports to a centralized SNMP management station. In addition, only alarms can be sent. The actual analysis still has to be done with the protocol analyzer at the individual LAN segment.

Network General and Novell currently offer such products, but users will soon see more, according to Jill Huntington-Lee, an editor and analyst at Datapro Research Group in Delran, N.J.

Even more important, she says, will be products from both the protocol analyzer vendors and management station vendors that will let managers perform protocol analysis from their management consoles. Such products should be available within a couple of months, according to Huntington-Lee.

JULIA KING

BUYERS' SCORECARD

HP, Sun LAN management products in dead heat

BY MICHAEL L. SULLIVAN-TRAINOR
CW STAFF

Carrying their workstation rivalry to the local-area network front, Hewlett-Packard Co. and Sun Microsystems, Inc. have established leadership positions in the popular multivendor LAN management market.

Their products, along with an element of IBM's Netview, represent the three major software platforms for Simple Network Management Protocol (SNMP) LAN management in terms of installed base.

According to users of these three products surveyed for Buyers' Scorecard, HP's Openview Network Node Manager and Sun's Sunnet Manager are well-matched contenders.

Both received overall scores of 52 points out of a possible 74 from their respective user samples. Users of IBM's Netview Network Manager 6000 were much more critical, giving that product an overall score of 44.

Each user group rated only its own product. The ratings were based on the average ratings each group gave its product across seventeen categories, multiplied by an average user importance factor that all users assigned to each category.

The scores are the averages of all categories combining both the user and importance ratings. Response base for the survey was 30 respondents for HP and IBM and 19 respondents for Sun (see methodology next page).

Although the HP and Sun ratings resulted in a tie, each user group registered higher levels of satisfaction in different categories.

For example, HP users rated Network Node Manager highest in the four categories respondents ranked as most important: vendor service responsiveness, fault isolation and troubleshooting, quality of technical support and overall ease of use.

Meanwhile, Sun's Sunnet Manager users gave their product the highest ratings in the other two key categories: value for the dollar (Sunnet's rating of 8.4 here was the highest in the survey) and ability to manage other vendors' equipment.

IBM's Network Manager 6000 achieved the second highest rating behind HP for vendor service, but otherwise, users rated it last in key ratings areas. Especially noteworthy were low ratings of 5.7 for ease of use and 5.1 for ability to manage other vendors' equipment.

Sun dominated leadership positions in the 11 closer-look categories, while HP users rated their product highest in only three areas.

IBM users scored their product third, sometimes by a wide margin, in all but two categories: training time required to use the product and ability to manage a large network.

Sunnet Manager's top scores included such basic network management features as performance measurement and planning, security and providing accounting information.

It also rated higher than its rivals for multivendor LAN management features, including managing traffic across bridges and routers, support for other vendors' SNMP extensions and ability to manage a large network. Because Sun sells its product primarily through third parties that add their own features, the strength of its rating also reflects the performance of the other vendors involved.

Users of Sunnet Manager indicated less satisfaction with the amount of training time required: They gave it the lowest rating (5.7) of the three user groups surveyed.

HP users gave their product the highest ratings in primary areas such as configuration management, training time required and mapping ability.

The product placed second by a nose in graphical user interface capability.

Based on user responses, Network Node Manager's areas of greatest weakness appear to be ability to manage large networks and ability to provide accounting information. ●

COMPUTERWORLD BUYERS' SCORECARD

LAN multivendor network managers

Total scores reflect average user ratings for all measured areas, weighted by user-assigned importance. Response base: Network Node Manager: 30; Sunnet Manager: 19; Network Manager 6000: 30

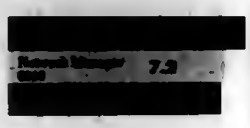
Product	Highest ratings	Lowest ratings
Hewlett-Packard Co.'s Openview Network Node Manager SCORE 52	Quality of technical support Overall ease of use Graphical user interface	Providing accounting information Performance management/capacity planning Managing traffic on modems and multiplexers
Sun Microsystems, Inc.'s Sunnet Manager SCORE 52	Value for the dollar Managing traffic across bridges and routers Graphical user interface	Training time required Managing traffic on modems and multiplexers Fault isolation and troubleshooting
IBM's Netview Network Manager 6000 SCORE 44	Responsiveness of vendor service Quality of technical support Managing large network	Managing other vendors' equipment Mapping ability Support for other vendors' SNMP extensions

KEY RATINGS

Hewlett-Packard Co.'s Openview Network Node Manager achieves the highest ratings in categories most important to users — fault identification, service, support and ease of use — while Sun Microsystems Inc.'s Sunnet Manager scores the highest ratings for value and the ability to manage other vendors' equipment. IBM's Netview Network Manager 6000 scores the second highest rating for service but places last in the the other key categories

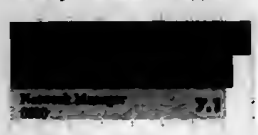
User importance rating

8.4 Responsiveness of vendor service

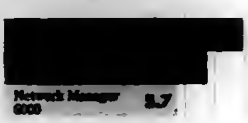


8.4 Fault isolation and troubleshooting

8.4 Quality of technical support



8.0 Overall ease of use



7.9 Value for the dollar

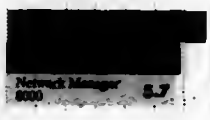
7.6 Ability to manage other vendors' equipment

A CLOSER LOOK

Network Node Manager achieves the highest ratings in three categories, but Sunnet Manager users rated their product highest in the other eight areas. Network Manager 6000 attains second highest ratings in two categories — managing large networks and providing accounting information — but again finishes last in the remaining areas.

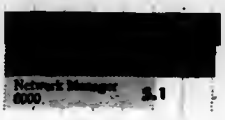
User importance rating:

7.5 Performance management and capacity planning



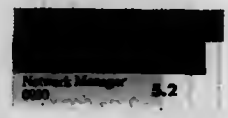
7.3 Graphical user interface capability

6.9 Mapping ability

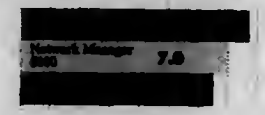


7.5 Configuration management

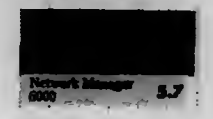
7.5 Support for other vendors' SNMP extensions



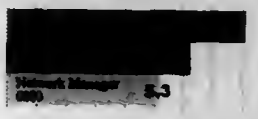
7.3 Ability to manage a large network



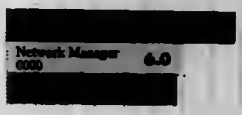
6.3 Ability to manage traffic on modems and multiplexers



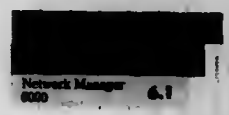
7.5 Ability to manage traffic across bridges and routers



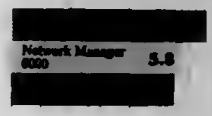
7.4 Training time required to use product



7.0 Security management



5.6 Providing accounting information



Verbatim

What do you like best/least about this product?
(Responses are based on the most frequently stated answers)

Likes
Works well with our equipment
Good vendor support
Multiproduct support

Dislikes
Slow system
Steep learning curve
Not flexible enough

Likes
Speed of the system
Multiproduct support
Good price for the product

Dislikes
Not flexible enough
Doesn't run on other platforms
Vague documentation

Network Manager 6000

Likes
Speed of the system
Gives networkwide view
Fault isolation

Dislikes
Difficult to use
Nonstandard interface
Slow

Loyalties

How likely would you be to purchase this product again if you were making the decision today?
(Reasons based on most frequently stated responses)

Response base: 30

Likely
The reason: Good support

30

Unlikely
0 respondents

Number of respondents

Response base: 19

Likely
The reason: Reasonably priced

19

Unlikely
0 respondents

Number of respondents

Network Manager 6000

Response base: 30

Likely
The reason: Meets our needs

27

Unlikely
The reason: Better products are on the market

2

Number of respondents

Don't know 1

Vital statistics

Total number of respondents: 79

What is your responsibility for LAN multivendor network management products?
(Multiple responses allowed)

Evaluate or recommend vendor	73
Determine need	63
Set standards for company	63
Select vendors	61
Approve or authorize purchase	38
Establish purchase agreements	37
Buy for user departments	31

What percentage of your LAN equipment is managed through this product?

91-100%	21
51-90%	23
21-50%	12
10-20%	11
Less than 10%	12

How many network nodes are managed by this product?

More than 500	16
201-500	8
51-200	18
1-50	37

How many years have you been involved with LAN management?

Five or more	23
Three to four	25
One to two	21
Less than one	10

METHODOLOGY

To qualify for *Computerworld*'s Buyers' Scorecard on multivendor local-area network management, a product had to have more than 200 installed sites. All three products rated are Unix-based and conform to the Simple Network Management Protocol (SNMP).

The minimum number of 30 respondents was waived for Sun Microsystems, Inc.'s Sunnet Manager because it has the smallest installed base — an estimated 300 units. The sample from Hewlett-Packard Co. was drawn from 2,200 Openview sites, and the IBM sample was drawn from 6,600 Netview sites. Actual response base was 30 users each for the HP and IBM products and 19 for the Sun product.

The survey was conducted and tabulated by Austin, Texas-based First Market Research, an independent research firm. Random lists of users were surveyed.

The total weighted scores were computed by multiplying the mean scores users assigned all criteria by the mean scores each user group gave its own product. Ratings are presented in order of importance based on these mean importance ratings.

WISH LIST

Respondents said they would like to see the following features added to their products:

- HP's Network Node Manager: support for more diverse networks and vendors, better analysis, more user friendliness, better mapping and multiple user interface features.
- Sun's Sunnet Manager: more graphics capabilities, better mapping, better analysis and multiple programming interfaces.
- IBM's Network Manager 6000: more graphics capabilities, better analysis and support for more diverse networks and vendors.

ACKNOWLEDGMENTS

Computerworld thanks the following individuals and companies for their assistance in preparing this Buyers' Scorecard: Computer Intelligence; Jeff Case, SNMP Research, Inc.; Tom Dolan, Westcon, Inc.; Jill Huntington-Lee, Datapro Research Group; David Passmore, Ernst & Young Center for Information Technology and Strategy; and Interop, Inc.

SNMP management stations[1]

VENDOR	PRODUCT	HARDWARE REQUIRED	DEVICES MONITORED	SNMP IMPLEMENTATION ON WHICH VENDOR'S SNMP IS BASED	MANAGES OTHER VENDOR DEVICES	TOOL KIT FOR VENDOR-SPECIFIC MIBS	USER INTERFACE PROVIDED	SECURITY FEATURES	MANAGEMENT CAPABILITIES	TYPE/NAME OF DATABASE INCLUDED	PRIVATE MIB EXTENSIONS SUPPORTED	TYPES OF REPORT WRITING CAPABILITIES	PRICE FOR SOFTWARE
AT&T Computer Systems (800) 247-1212	AT&T Systems Manager	AT&T Intel 80386- and 1486-based PCs	Hubs, routers, servers	Netlabs	Yes	Yes	X Window	User authentication, standard SNMP features	Isolates faults, detects unauthorized users, includes standardized APIs[2], supports sets	Flatfile/Proprietary	ACC, AT&T, Bayrex, Cisco, Hughes, Newell, Nexion, Racal Interlan, Synoptics, Unisys, Wellfleet, Wellmanagg, Xyplex	None	$10,500
Advanced Computer Communications (805) 963-9431 (800) 444-7854	ACS 4800 Network Management System	Sun 3, 4, Sparcstation	Any	Carnegie Mellon, MIT	Yes	Yes	Proprietary GUI	Encryption, user authorization	Automates entry of devices on network map, isolates faults, detects unauthorized users, includes standardized APIs, supports sets	Relational/Informix	Cabletron, Cisco, David Systems, CMC Rockwell, Micro Technology, Novell, Lingermann-Bess	Real-time and historical performance statistics, configuration and event reporting	$12,500
Cabletron Systems, Inc. (603) 332-9400 (800) 326-8278	Spectrum Advanced Management System	Sun 4, Sparcstation	Any	AIP	Yes	Yes	X Window, Motif	User authentication	Automates entry of devices on network map, isolates faults, detects unauthorized users, includes standardized APIs	Object-oriented/ Proprietary	Chipcom, David Systems, Novell, Synoptics, others	Configuration reporting, trend analysis	$55,000
	Remote Lanview/Windows	Intel 80386- and 80486-based PCs	Bridges, hubs, Cabletron LAN cards	SNMP Research	Yes	No	Microsoft Windows	Password, sets authentication	Isolates faults, detects unauthorized users, supports sets	Flatfile/DB Vista	Cisco, Synoptics, Xyplex	Statistical data logging	$4,995
Chipcom Corp. (508) 460-8900 (800) 228-9930	Online Network Control System	Intel 80386- and 1486-based PCs	Hubs	SNMP Research	No	No	X Window	Encryption, user authentication	Isolates faults, detects unauthorized users, includes standardized APIs, supports sets	Relational/Ingres	Chipcom	Configuration, performance and security reporting, software version tracking, SNMP logs	$6,500+
Cisco Systems, Inc. (415) 326-1941 (800) 553-6387	Netcentral Station	Sun 3, Sparcstation	Any, but intended for routers	Proprietary	Yes	Yes	X Window	Standard SNMP features	Isolates faults, supports sets	Relational/Sybase	Any	Configuration and threshold reporting, trend analysis, software version tracking	$14,000
Codex Corp. (508) 261-4000	9800/SNMP	Intel 80386-based PCs	Bridges, hubs, routers	MIT	Yes	Yes	Command line, proprietary windows	Password	Isolates faults, contains trouble ticket application[3], includes standardized APIs	Relational/Faircom	Cisco, Proteon	Alarm and trap reporting	$11,250
David Systems, Inc. (408) 720-8087 (800) 752-7848	Expanview 1.0	Intel 80386 and 1486-based PCs, IBM PS/2	Any, but intended for hubs	Epilogue Technology	Yes	No	Microsoft Windows	Encryption, user authentication	Automates entry of devices on network map, isolates faults	Relational/Ashton-Tate	David Systems	Configuration and event reporting, alarm logs	$1,495
Digital Analysis Corp. (703) 476-5900	Eye Node Network Management System	DG Aviion, Sun Sparcstation, Solbourne, IBM PS/2, Intel 80386-based PCs	Any	SNMP Research	Yes	Yes	Microsoft Windows	User authentication	Isolates faults, contains trouble ticket application, includes standardized APIs, supports sets	Relational/Ingres	Any	Configuration reporting, trends analysis, software version tracking	$14,995
Digital Equipment Corp. (508) 493-7161 (800) 344-4825	Decnet Management Station for Ultrix	Decstation, Vaxstation, VAX, RISC-based machines	Routers, host machines	Performance Systems International, SNMP Research	Yes	Yes	X Window	User authentication	Automates entry of devices on network map, isolates faults, supports sets	Relational/Ingres	Several that are published	Configuration reporting, trend analysis	$7,070
FTP Software, Inc. (617) 246-0900	PC/SNMP Tools	IBM PCs and compatibles	Any	Proprietary SNMP Research, Performance Systems International, Carnegie Mellon, MIT	Yes	Yes	Command line	Encryption, user authentication	Supports sets	None/NA	Any	None	$300
Fibermux Corp. (818) 709-6000	Lightwatch	Sun Sparcstation	Hubs	SNMP Research	No	No	X Window, Open Look	User authentication	Automates entry of devices on network map, isolates faults, detects unauthorized users, supports sets	Flatfile/Proprietary	Fibermux	Alarm log	$4,500
Hewlett-Packard Co. (408) 973-1919 (800) 752-0900	HP Open View Network Node Manager	HP/Apollo 9000, Sun Sparcstation 1, 1+, 2, IPC	Any	Carnegie Mellon, MIT	Yes	Yes	X.11 Motif	User authentication	Automates entry of devices on network map, isolates faults, detects unauthorized users, includes standardized APIs, supports sets	Flatfile/Proprietary	Any	Configuration and event reporting, software version tracking, trend analysis	$15,000
Hughes LAN Systems, Inc. (415) 966-7300 (800) 388-5387	9100 Network Management Center	Sun Sparcstation 1, 2, Sun 4	Any	Epilogue Technology	Yes	Yes	Sun View, X Window	Password, sets authentication	Isolates faults, supports sets	Relational/Unify	ACC, Cisco, David Systems, Novell, Proteon, Synoptics, Wellfleet, others available on Internet in ANSI format	Configuration reporting, software version tracking, inventory and alarm logs, network map protocols	$14,950
IBM Contact local IBM branch (800) 426-2468	Netview with TCP/IP Version 2.0 for VM, MVS	IBM System/370	Any	NP	Yes	Yes	Command line, panel routines	Features standard in SNMP	Detects unauthorized users, includes standardized APIs, supports sets	Flatfile/Proprietary	Any	None	NP
	AIX Network Management/6000	IBM RS/6000	Any	NP	Yes	No	Command line, X.11 Windows	Standard User features	Partially automates entry of devices on network map, isolates faults, detects unauthorized users, includes standardized APIs, supports sets	Flatfile/Proprietary	None	None	$1,500 - $6,000
Interlan Systems Corp. (703) 704-9200	Watchtower	Apple Macintosh	Bridges, routers, host machines	FTP Software, SNMP Research, Performance Systems International, Carnegie Mellon, MIT	Yes	Yes	Microsoft Windows	User authentication	Automates entry of devices on network map, isolates faults, detects unauthorized users, contains trouble ticket application	Flatfile/Proprietary	Cayman, Cisco, FTP, Shiva	Configuration reporting, trend analysis, software version tracking	$2,495

[1]Simple Network Management Protocol (SNMP) management stations, as defined by Jill Huntington-Lee, consultant at Datapro Research Group in Delran, N.J., are monitor and control network devices that use SNMP commands to read or change values stored in the device's management information base. This survey focuses on turnkey SNMP management stations, which provide a graphical user interface and applications supporting management activities. [2]API stands for application programming interface. [3]"All" SNMP implementations includes those by Carnegie Mellon University, Epilogue Technology Corp., FTP Software, Inc., MIT, Netlabs, Inc., Performance Systems International, Inc. (formerly Nysernet, Inc.) and SNMP Research, Inc. [4]Trouble ticket application is a knowledge-based capability that offers suggested corrective actions based on past network behavior.

The companies included in this chart responded to a recent survey conducted by *Computerworld*. When a vendor is unable to provide specific information about its product, the abbreviation NP (not provided) is used. When a question does not apply to a vendor's product, the abbreviation NA (not applicable) is used. Further product information is available from the vendors.

VENDOR	PRODUCT	HARDWARE REQUIRED	DEVICES MONITORED	SNMP IMPLEMENTATION ON WHICH VENDOR'S SNMP IS BASED	MANAGES OTHER VENDOR DEVICES	TOOL KIT FOR VENDOR-SPECIFIC MIBS	USER INTERFACE PROVIDED	SECURITY FEATURES	MANAGEMENT CAPABILITIES	TYPE/NAME OF DATABASE INCLUDED	PRIVATE MIB EXTENSIONS SUPPORTED	TYPES OF REPORT WRITING CAPABILITIES	PRICE FOR SOFTWARE
Allen Technology, Inc. (714) 970-0000 (800) 900-0004	Lanar Network Management System	Sun Sparcstation IPC, Decstation 2100	Any	All	Yes	Yes	X Window	User authentication	Automates entry of devices on network map, isolates faults, detects unauthorized users, includes standardized APIs, supports sets	Relational/Ingres	ACC, Apple, Cabletron, Cisco, David Systems, Fibermux, Kinetics, Novell, Synoptics, Unisys, Wellfleet, Xylogics, Xyplex, others	Trend analysis	$18,500
Microcom, Inc. (617) 551-1000 (800) 822-8224	Microcom Management Station	Intel 80386SX-based IBM PC AT	Bridges	SNMP Research	No	No	Proprietary Windows	User authentication	Automates entry of devices on network map, isolates faults	Flatfile/Proprietary	Microcom	Configuration reporting	$3,390
NCR Corp. (803) 796-0760	NCR Net Manager	NCR System 3000, Tower	Any	Wellengong	Yes	Yes	Microsoft Windows	Standard Unix features	Automates entry of devices on network map, isolates faults, detects unauthorized users, contains trouble ticket application, supports sets	Flatfile/Proprietary	Any	None	$1,000
Netlabs, Inc. (415) 961-9500	Dual Manager	Sun Sparcstation, Mips, Compaq, IBM RS/6000, NCR	Any	Proprietary	Yes	Yes	X Window, Motif, Open Look	User authentication	Automates entry of devices on network map, isolates faults, includes standardized APIs, supports sets	Flatfile/Proprietary	3Com, Cisco, Proteon, Synoptics, Wellfleet	Configuration reporting, trend analysis	$12,500
Network Application Technology, Inc. (408) 370-4300 (800) 543-8687	NMS/100	Intel 80386-based PCs	Bridges, proprietary Ethernet monitor	All	No	No	Microsoft Windows	User authentication	Automates entry of devices on network map, isolates faults, supports sets	Flatfile/Proprietary	Network application technology	None	$7,995
Network Systems Corp. (612) 424-4888	SNMP NMS	Sun Sparcstation	Bridges, hubs, routers, IPX, WAN interfaces	FTP Software, SNMP Research, Carnegie Mellon, MIT	Yes	Yes	X Window	Password	Isolates faults	Flatfile/Proprietary	Any that are published	Configuration reporting	$15,000
Newbridge Networks, Inc. (703) 834-3600 (800) 332-1000	4602 Intelligent Net-workstation/5636 SNMP Manager	Sun 4, Sparcstation	Bridges, multiplexers, routers	SNMP Research	Yes	Yes	Sun View	User authentication	Isolates faults, detects unauthorized users, contains trouble ticket application, supports sets	Relational/Unify	ACC, Cabletron, Synoptics, Wellfleet	Configuration reporting, trend analysis, software version tracking	$15,900
	8001 LAN Manager	IBM PCs and compatibles	Bridges, routers	FTP Software	Yes	No	Proprietary windows	User authentication	Isolates faults, detects unauthorized users, supports sets	Flatfile/Proprietary	Newbridge	None	$1,000
Novell, Inc. (408) 473-8333 (800) 243-8526	Lanteyn Services Manager	Intel 80386-based PCs	Bridges, hubs, multiplexers, routers, Novell Lanterns	Proprietary	No	No	Microsoft Windows	User authentication	Automates entry of devices on network map, isolates faults	Relational/Novell	Novell	Configuration reporting, trend analysis, software version tracking	$4,995
Proteon, Inc. (508) 898-2800	Overview	Proteon turnkey systems	Routers	MIT	Yes	Yes	Command line, proprietary windows	None	Automates entry of devices on network map	Flatfile/Proprietary	Any	Configuration reporting, alarm log	$6,995 for software and turnkey system, software not sold separately
Racal Interlan (508) 263-9929 (800) 526-8255	Roll Call	Intel 80386-based PCs	LAN cards	Carnegie Mellon	Yes	No	Microsoft Windows	User authentication	Automates entry of devices on net work map, isolates faults	Flatfile/Proprietary	Any in ANSI format	None	$995
	LAN Central Express	Sun Sparcstation IPC	Bridges, hubs, routers, terminal servers	Carnegie Mellon	Yes	Yes	X Window	User authentication	Automates entry of devices on network map, isolates faults detects unauthorized users, includes standardized APIs, supports sets	Flatfile/Proprietary	Any in ANSI format	None	$6,495
Retix (213) 390-2200 (800) 255-2333	5025 Network Management Center	Sun Sparcstation	Bridges, routers	Epilogue Technology	Yes	Yes	X Window	Password, user authentication	Automates entry of devices on network map, isolates faults, detects unauthorized users, contains trouble ticket application, includes standardized APIs, supports sets	Flatfile/Proprietary	Retix	Trend analysis	$12,000
SNMP Research, Inc. (615) 573-1434	Xnetmon	Sun 3, 4, Sparcstation, IBM RS/6000, Decstation, Varistation, Silicon Graphics, DG Aviion	Any	SNMP Research	Yes	Yes	X Window, command line	Standard SNMP features	Automates entry of devices on network map, isolates faults, contains trouble ticket application, includes standardized APIs, supports sets	Flatfile/Proprietary	Any, including Network Systems, Novell, SNMP Research, Wellfleet, Xylogics	None	$4,995
Sun Microsystems, Inc. (415) 960-1300 (800) 821-4643	Sunnet Manager	Sun Sparcstation	Any	SNMP Research	Yes	Yes	Open Look	User authentication, secure RPC, standard Unix features	Automates entry of devices on network map, isolates faults, includes standardized APIs, supports sets	Flatfile, Netnews/ Proprietary	Any that are published or available on Internet	None	$3,000
Synernetics, Inc. (508) 670-9009	Viewplex	Sun Sparcstation, Sun 3/60	Hubs	SNMP Research	Yes	Yes	Open Look	Encrypted password	Automates entry of devices on network map, isolates faults, supports sets	Flatfile/Sun	Synernetics	None	$19,900
Synoptics Communications, Inc. (408) 988-3400 (800) 776-6656	Lattisnet Basic Network Management for Ethernet, Token Ring	Intel 80386-based IBM PCs and compatibles	Bridges, hubs, routers	Epilogue Technology	Yes	Yes	Microsoft Windows, HP Open View	Read/write communications strings, user authentication	Isolates faults, detects unauthorized users, supports sets	Flatfile/Proprietary	Cabletron, Cisco, Retix, Xyplex	Configuration reporting, trend analysis, software version tracking	$2,295
	Lattisnet Advanced Network Management for Ethernet, Token Ring	Intel 80386-based IBM PCs and compatibles	Bridges, hubs, routers	Epilogue Technology	Yes	Yes	Microsoft Windows, HP Open View	Read/write communications strings, user authentication	Isolates faults, detects unauthorized users, supports sets	Flatfile/Proprietary	Any that are published	Configuration reporting, trend analysis, software version tracking	$6,500
	Lattisnet Network Management for Unix	Sun Sparcstation	Bridges, hubs, routers	Epilogue Technology	Yes	No	Open Look	Read/write communications strings, user authentication	Automates entry of devices on network map, isolates faults, detects unauthorized users, includes standardized APIs, supports sets	Flatfile/Sun	Any that are published	Configuration and event reporting, trend analysis, software version tracking	$3,995
The Wellengong Group, Inc. (415) 963-7100 (800) 872-8649	Management Station, Release 2.0	Sun 3, 4, Sparcstation, Decstation, Decsystem, Motorola Delta 8000 MPC, Intel 80386- or 1486-based PCs	Any	Performance Systems International	Yes	Yes	X Window	Standard SNMP features	Automates entry of devices on network map, isolates faults, includes APIs, supports sets	Flatfile/Proprietary	Cisco, David Systems, Network Application Technology, Network Computing Devices, Novell, Shiva, Synoptics, any from RFC-compliant SNMP agents	Configuration reporting, network statistics	$10,000

VENDOR	PRODUCT	HARDWARE REQUIRED	DEVICES MONITORED	SNMP IMPLEMENTATION ON WHICH VENDOR'S SNMP IS BASED	MANAGES OTHER VENDOR DEVICES	TOOL KIT FOR VENDOR-SPECIFIC MIBS	USER INTERFACE PROVIDED	SECURITY FEATURES	MANAGEMENT CAPABILITIES	TYPE/NAME OF DATABASE INCLUDED	PRIVATE MIB EXTENSIONS SUPPORTED	TYPES OF REPORT WRITING CAPABILITIES	PRICE FOR SOFTWARE
Timeplex, Inc. (201) 586-3333 (800) 776-6877	TimeLAN 100 Element Management System	Sun Sparcstation 3, PC	Bridges, hubs, routers	Proprietary	Yes	Yes	Sun View	User authentication	Isolates faults, includes standardized APIs, supports sets	Relational/Sybase	Any that are published	Configuration reporting, trend analysis	$10,000 - $16,000
Ungermann-Bass, Inc. (408) 496-0111	Netdirector	Compaq Intel 80386-based PCs, IBM PS/2 Models 70, 80	Bridges, hubs, modems, routers, adapters, servers	Epilogue Technology	Yes	No	Presentation Manager	Password	Automates entry of devices, isolates faults, detects unauthorized users, standardized APIs, supports sets	Relational/Sybase	Ungermann-Bass	Configuration reporting, trend and fault-performance analysis	$7,500 - $16,000
Vitalink Communications Corp. (415) 794-1100 (800) 959-8452	VNManager	Tektronix, Decstation 2100, 3100	Bridges, routers	SNMP Research	Yes	No	X Window	Password	Automates entry of devices, isolates faults, detects unauthorized users, supports sets	Relational/Informix	Xyplex	Configuration reporting, fault collection, traffic monitoring	First copy $10,000; second copy $5,000
Wellfleet Communications, Inc. (617) 275-2400	SNMP-NMS	Sun 3, Sparcstation	Bridges, routers	SNMP Research	Yes	Yes	X Window, Sun View	User authentication	Isolates faults	Flat file/Proprietary	ACC, Cisco, Novell, Proteon, Shiva, Synoptics, Xylogics	None	$15,000

Many people will take LAN outsource track

BY TODD DAGRES

When the size, complexity and expense of local-area network management get to be too big a job, many companies will begin to consider outsourcing.

Turning network management functions over to an outside contractor is by no means common practice at this point; in a study of Fortune 1,000 companies, most information systems and telecommunications professionals said they would not trust an outsourcer to manage such a strategic resource.

However, 75% of these same IS and telecom professionals agreed that certain LAN functions, such as moves, adds and changes, could effectively be outsourced. As providers of LAN outsourcing improve their capabilities, the LAN service market will grow in popularity; in fact, it is expected to reach $4 billion by 1993.

Of the five categories of LAN outsourcing services — planning, design, implementation, operation/management and remedial maintenance — it is the fourth category, LAN operation and management, that is most needed by firms today.

Providers of this service are a diverse group (see story at right). Some, such as Digital Equipment Corp., Unisys Corp. and Hewlett-Packard Co., have introduced formal LAN operation and management services packages, while others, such as Electronic Data Systems Corp. (EDS), IBM, Andersen Consulting and Network Management, Inc., are currently less structured in what they provide.

Their offerings usually include monitoring the network, identifying faults, opening trouble tickets and correcting faults.

No comprehensive plan

No one, however, has yet to introduce a suite of services covering all aspects of LAN operation management — including performance, configuration, security and accounting management. Any of the larger outsourcers will provide "total" LAN outsourcing to select customers. This may entail transferring all LAN responsibility to the outsourcer and, in some cases, people and capital equipment as well. Not many customers are ready for such a service.

The custom nature of LAN outsourcing makes discussions of price difficult. Vendors charge users per event, hour or year for certain service elements. However, the rule for LAN outsourcing service packaging and pricing will be the custom bid.

There are a few words of caution for companies evaluating LAN outsourcing alternatives and vendors. Compared with more traditional outsourcing environments such as data centers and corporate networks, the LAN environment is less mature, less disciplined, more dynamic and more decentralized. LAN operation management control and responsibility is spread across multiple divisions and sites of the organization. Finally, there are many hidden activities associated with LAN operations and management. ●

Dagres is director of data communications research and consulting at The Yankee Group, a market research and consulting firm in Boston.

Are you an outsourcing candidate?

- Are you having difficulty maintaining expertise internally?
- Are your networks growing faster than your ability to manage them?
- Would you like to give up routine tasks and focus on more strategic functions?
- Are your LAN management costs way out of hand?
- Are you moving from a mainframe to a LAN environment? You might consider bringing in an outsourcer on a temporary basis.

The right stuff

Once you've found an outsourcer that covers the specific needs of your environment, consider the following requirements:

- A demonstrated commitment to your company.
- A sufficient organizational and support infrastructure.
- A demonstrated ability to manage an environment similar to your industry and applications, local-area and wide-area networks and geographic area.
- Guaranteed service levels.
- An ability and commitment to change management as LANs evolve.
- No hidden costs.
- An ability and willingness to absorb LAN management staff and capital if necessary.

Roundup of major vendors

Following are the major categories of LAN outsourcers:

● **Computer companies** with substantial service businesses, such as IBM, DEC, HP and Unisys. DEC and HP were among the earliest to roll out actual packages. IBM has been hesitant to promote its services because of its relationships with value-added resellers (VAR) and distributors; however, it is expected to begin promoting them more aggressively.

Strengths: Service and support infrastructure, knowledge of technology and installed base.

Weaknesses: Orientation toward their own products, skills limited to certain technologies or platforms and a perceived "box mentality."

● **Telecommunications companies**, including interexchange carriers, regional Bell operating companies (RBOC) and value-added network vendors.

AT&T has the service infrastructure to become a major LAN outsourcer but needs to combine the support infrastructure of its telecommunications and computer divisions.

U.S. Sprint Communications Co. and MCI Communications Corp. have developed LAN connectivity and integration services, but they have limited operation and management capability.

The RBOCs have strong regional service organizations but limited data communications and applications experience. Value-added network providers' strongest suit may be their ability to manage an internetwork of LANs as part of a public packet network service.

Strengths: Large service and support infrastructure, significant experience in physical cabling and communications, network integration experience, remote management capability, investment capital, acquisitions and alliances.

Weaknesses: Interexchange carriers: lack of experience in data applications. RBOCs: regional limitations, regulations and a "telephone company" reputation. Value-added network providers: light on service infrastructure and staff.

● **Systems integrators and facilities managers**, such as EDS, Andersen Consulting, McDonnell Douglas Computer Systems Co. and Martin Marietta, are approaching LAN outsourcing from the timesharing, data center and mainframe environments.

Strengths: Service, experience in data applications, familiarity with multivendor environments and professional service delivery infrastructure.

Weaknesses: Light on international capabilities.

● **LAN specialists**, including Network Management, Inc. and Evernet. Their challenge is to develop a national service capability that includes integration services in addition to LAN operations and management.

Novell, Inc. is also trying to build user support capabilities. Its offering is limited to help desk support but includes a multivendor support capability.

● **"The LAN 100,"** a collection of LAN VARs, distributors and integrators expanding their service offerings to complement their presales design, implementation and maintenance services.

Strengths: Focus on LANs, low-end integration capabilities, knowledge of LAN environment.

Weaknesses: No nationwide technical service infrastructure, limited to certain products and technology, inability to provide large-scale 24-hour and on-site service.

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Denny's POS effort

Food service firm's IS chief reveals how point-of-sale system puts store managers where they belong — out front helping customers

BY CHARLOTTE A. KRAUSE

The climate was not particularly favorable in 1988 at Denny's, Inc. for a major point-of-sale (POS) system rollout. We had just been acquired by TW Services, which left the company highly leveraged, and a previously unsuccessful stab at a companywide POS system had left restaurant managers skeptical about the technology.

Nevertheless, delay was not an option. Denny's needed a system to improve its cash accountability, labor costs, inventory and productivity, and it needed it as soon as possible. The intense competition in the mature food service market demanded it.

What Denny's had in place before 1988 was a manual, paper-based system in which restaurant managers used handheld data entry devices to gather weekly payroll hours. Calculation mistakes were common, and corrections bogged managers down in hours worth of paperwork.

Sales reporting was done with a pencil, which turned the restaurant managers into bookkeepers. They balanced sales totals from previous cash register readings and conducted manual guest check audits. Not only were the checks sometimes illegible, but the store managers also didn't have enough time to verify that every entree was priced correctly or that the sales tax and totals were correct.

Automation at fingertips

When it is complete in 1992, our Intel Corp. 80286-based IBM Personal Computer system — dubbed Restaurant Automation for Denny's Success, or RADS — will put automation at the fingertips of every employee at our 1,000 company-owned restaurants in 46 states. We are putting in systems at the rate of one per day.

RADS gives us a way to measure our business in more detail within each restaurant, allowing us to manage each one more efficiently and make a greater impact on Denny's bottom line.

RADS has three goals:

- To capture more sales data, especially that not previously recorded, such as food produced but not paid for, check calculation errors and so on.
- To increase control of labor dollars via a new automated time-keeping system.
- To reduce paperwork for managers so that they can spend more time on the floor providing service to customers.

Each setup basically consists of three to five terminals, another terminal that acts as a cash register, plus a PC in the back office and a remote printer in the kitchen. Servers enter their orders at a convenient terminal. Information from each store is summarized once each day, then automatically sent to Denny's headquarters mainframe in Irvine, Calif., where the data is summarized for financial reporting.

Mark Thomas

Denny's formally launched RADS in June 1988 at a senior operations managers' review, followed one month later by two stores going live in Orlando, Fla. Fresh on the company's mind was a previous POS rollout during the early 1980s that had had little impact and a negative image. That project died an early death, primarily because of an unclear return on investment, limited senior management support and the high cost of the hardware — in excess of $40,000 per restaurant.

We were determined not to let that happen again. We would make sure that the support was there from all areas of the company and that the project was well-understood. We did this by holding an orientation with every level of management, starting at the top, and with all groups in the regional offices as well. We took a cross-functional team approach to the effort based on the manufacturing concept of quality control circles. Instead of design, engineering, procurement and shop floor quality control, the team included human resources, training and accounts payable (see story page 84).

Executive support

By early 1989, we had several factors going for us that we didn't have with our first POS attempt. First, we had the support of our senior executives, who pushed for the project. Second, we had been through 18 pilot programs in the Orlando area and could use them as a guide.

Our executives were behind the project because they knew time and revenue gains were possible. Information systems people shared this vision. Ensuring continued executive buy-in and support for RADS meant not letting technology dominate the decision process, so we chose a POS software solution based on a generic PC platform.

Because there was no commitment to a predetermined technology, people could concentrate on the business opportunity.

Another advantage of a generic hardware platform is an investment in the future. Now, an application can be ported across generations of PCs, ensuring a much longer, useful life for the software investment.

Our pilot program validated the use

Continued on page 84

Krause is director of information services at Denny's, Inc. in Irvine, Calif.

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- **Rollout to 1,000 stores by '92**

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Continued from page 81

of the software and hardware by letting us match systems performance with our project objectives and expectations.

However, things were not all rosy. We were aware that the pilot program did not go completely smoothly. There was a three-page list of software enhancements needed, including the ability to void an entire check and increase the number of modifiers for Denny's extensive food preparation options.

Furthermore, while the senior executives were behind the project, there were skeptics in the operations group: the line managers whose buy-in support was critical. They openly expressed their intention to let the 18 restaurants in Orlando try the pilot system first before they would test it.

We got around their skepticism by making the line managers part of our initial orientation and keeping them in the loop.

As the rollout and orientation proceeded, everything started to go as planned. This good news traveled fast, cementing restaurant management support.

Key issue: Nationwide training

With orientation at the executive level came hands-on training at the store level. Because RADS training isn't cheap — the first one-hour orientation costs $200 to $250 (44 employees multiplied by an average of $4.50 per hour plus trainers' wages, travel time and expenses) — the trainers make sure the meeting is rich in content and worthwhile. We recruited store general managers with good training skills to train others.

RADS training is considered a good assignment because it allows the general managers to learn the new computer system and be exposed to many management styles, problems and issues.

Only nine teams of three trainers each were required to train staff members at 320 restaurants last year. With an average of 44 employees per store, the nine teams converted more than 14,000 employees to RADS users in 1990. Using a limited number of teams was effective and enabled us to keep rollout costs down.

At the home office, only two people are required to coordinate the ongoing rollout. One supervisor handles the trainers, and an administrative assistant handles logistics such as ordering equipment, paying invoices, reserving training facilities, scheduling training equipment delivery, pickup and storage, scheduling equipment installation and resolving postinstallation difficulties.

Measurable benefits

With training well under way, the project's momentum was building. Then the benefits began to accumulate.

We based our return-on-investment analysis on an increase in revenue attributable to our ability to report all sales for the first time. For example, the POS system could now capture sales previously not reported, such as single cups of coffee served without charge, food given away to friends, miscalculations and so on.

Because we can capture all food sales, we're already realizing a revenue increase in excess of 1% at our first 400 or so sites, which translates to $10,000 per year improvement per store.

No less important are the time savings in administrative activities. We identified those functions that provide time savings either because the computer did the number crunching or because the data quality improved, needing less error checking and follow-up by the home office.

For example, in our former system, the employees filled in time cards. The manager then calculated the hours worked by each employee, totaled the labor costs for the restaurant, keyed the hours into the handheld terminal and telephoned in the labor cost information.

Now, the employee uses the computer as a time clock. All the manager does is review the hours, then release them for polling to the home office. Managers need to call only their district leaders with labor costs they had automatically calculated on the PC.

Time savings are assessed at about 14 hours per week per store. When the rollout is complete, those time savings will translate into about $25 million. Time has been redirected to customer service, with managers expediting orders in the kitchen if the cooks get backed up, clearing tables to seat customers quicker and greeting customers.

Added benefits

The POS system also affects new hire procedures. Previously, it was common to manually process a new hire application form three or four times because information was missing. The manager now enters new hire information on the back office PC. RADS won't accept that application without every field being addressed.

RADS also helps us identify staffing and other problems that hinder a consistent operation.

For example, Denny's popular "10-minute guarantee" offers customers a free meal if their breakfast or lunch doesn't arrive within 10 minutes. With POS, there are special tendering categories for these free meals that we can track along with store location, time of day and server. This allows us to give management the information they need to focus on better execution and better service.

In summary, when implementing information technology in a nationwide network, it's imperative to secure senior management buy-in and support, to establish and manage expectations and to reach out to many disciplines.

Now that we have a way to measure our business in more detail within each restaurant with RADS, we can manage it more efficiently and make a greater impact on Denny's bottom line.

Denny's is committed to its major investment in POS. Even though the food service industry is feeling the impact of the recession, Denny's reported solid increases in earnings this year. ●

Project milestones

- **July '88** Started two pilot stores in Orlando, Fla.
- **October '88** Expanded pilot to one district (eight stores)
- **1Q '89** Expanded to second and third districts (18 stores)
  - Tested support functions
  - Produced installation documentation
  - Initiated training procedures and help desk
- **2Q '89** Prepared for rollout at 30 stores per month
  - Developed additional support functions (marketing, administrative and more documentation)
- **June '89** Project launch
- **December '89** 67 restaurants in Florida and California
- **December '90** 387 restaurants
- **December '92** Estimated rollout completion date

Source: Denny's, Inc.

Interdisciplinary team

Key to ideal project team is drafting non-IS players

At Denny's, the RADS project team spans many disciplines — IS, training, human resources and finance. The key here is that the team includes employees not normally in the IS department. This provides a fresh perspective that blends business and technology strengths.

- **IS.** Denny's central IS department in Irvine, Calif., oversees the installation's technical aspects and ensures that it is proceeding smoothly.

It also manages the help desk, which acts as the department's eyes and ears to follow the implementation of remote technology. These folks are a vital part of the IS team and should be held in as much esteem as programmers.

It is important for the desk to receive calls from both beta-test and fully functioning sites. Doing so helps them anticipate problems before the project goes out to the full user base. Lots of telephone calls may signal a decrease in customer satisfaction — trainers and development teams need to hear the feedback.

- **Training.** At Denny's, the training departments created more than 30 different kinds of training materials, including videos, self-help guides, job aids and procedure manuals.
- **Human resources.** The human resources department helped with initial job descriptions and now aids in continual recruitment of trainers as we move into new areas of the country.
- **Finance.** The finance department measures our progress: Is the revenue increasing as we had projected compared with the rest of the chain? Finance also issues the monthly reports on our capital budgets: Are we completing the conversions on schedule and on budget?

For Denny's, the answer to both questions is yes, but more importantly, our progress is being measured by the same people who measure other financial objectives of the company.

The internal auditors are a key part of the financial department. They are the impartial evaluators and can really focus on controls and cross-checks, which are important for a business in many remote locations.

CHARLOTTE A. KRAUSE

Learn by their experience

You can't afford to learn about rollouts by starting from scratch and experimenting. You need to leverage the experience of others.

Your vendors are among your best resources because rollouts are quite likely a familiar activity to them.

Look at your vendors as partners: When you solve problems together, you gain the benefit of their expertise, and you both win if the problem is solved successfully.

Here's how our vendors helped us:

▶Our installation vendor, Datatec Industries in Fairfield, N.J., specializes in implementing POS rollouts and controls everything from one central point.

This lets us avoid negotiating with dozens of local contractors around the U.S., each of which might have its own interpretation of our wiring requirements and understanding of POS networks. It also simplifies billing and other coordination details and lessens the probability of miscommunication.

A complex multisite rollout such as Denny's requires constant centralized communication, nationwide project management skills and specialization in POS environments.

Using a single provider of POS installation services allowed us to streamline our chainwide POS implementation and avoid large increases in personnel necessary to manage the rollout.

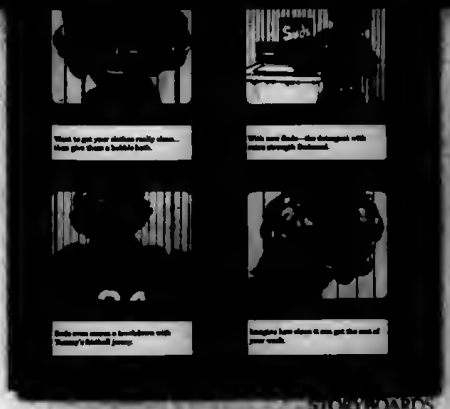
▶Our information delivery software vendor — Xcellenet, Inc. in Atlanta — brought its telecommunications knowledge to bear when we needed to resolve modem problems at our remote sites.

▶Our software vendor — Fisher Restaurant Systems, Inc. in Marietta, Ga. — implemented the software enhancements we identified during our 18 pilots, customizing the software for Denny's.

▶We even found a partner in our moving company, which now stores and ships our training systems between training sites.

Your vendors should go out of their way to fix your problems, whether real or perceived.

CHARLOTTE A. KRAUSE



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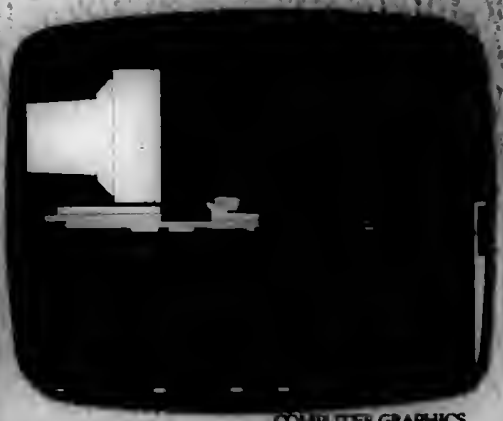

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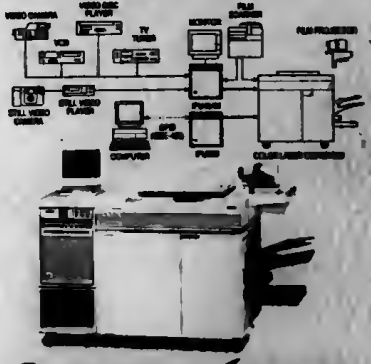

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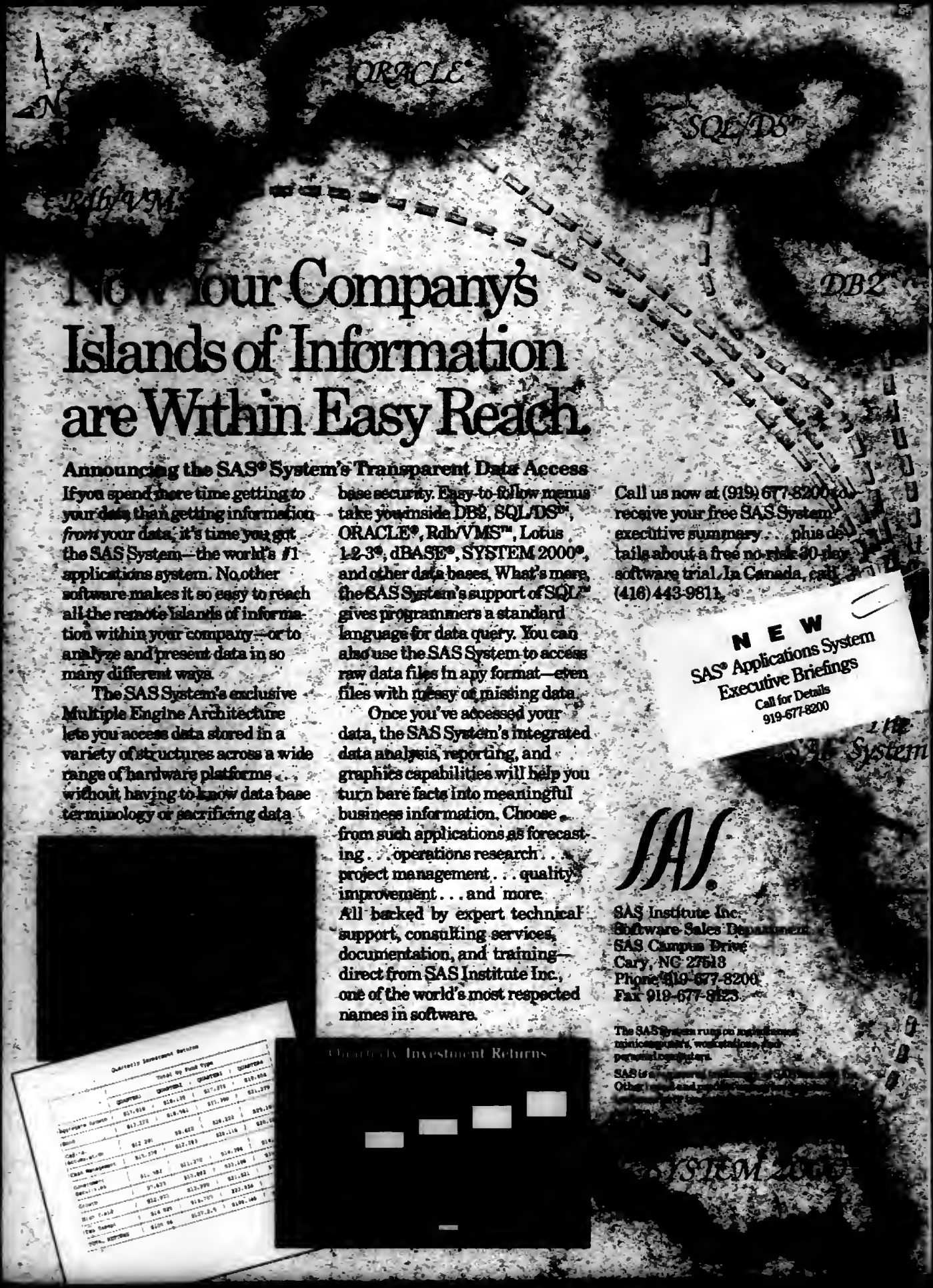

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Coming out

▶ **Concurrent Computer Corp.** is out from under an involuntary bankruptcy petition filed against it in late December by a group of three large institutional bondholders. A debt-restructuring agreement reached in March by Concurrent, its bank group and the bondholders led to the withdrawal of the petition, Chief Executive Officer **Denis Brown** said.

Just in case

▶ Beaverton, Ore.-based **Cadre Technologies, Inc.** recently announced its acquisition of DB Software Corp. in San Francisco. The latter company makes a database design product called DB RE/generator, which produces SQL code that runs on IBM mainframes and other platforms. The acquisition will help Cadre fill out its general-purpose computer-aided software engineering product line.

S.O.P.

▶ An industry/government **task force** has been formed to help coordinate the development of product data exchange standards (PDES) used in computer-integrated manufacturing and concurrent engineering. Task force members come from **McDonnell Douglas Corp., Digital Equipment Corp., IBM, General Motors Corp.**, the **National Aeronautics and Space Administration**, the **U.S. Departments of Defense, Commerce and Energy, PDES, Inc.** and the **IGES/PDES Organization.** The group hopes to have a comprehensive product data exchange implementation plan in place by November.

The Sun also recycles

▶ In two separate but complementary efforts, **Sun Microsystems, Inc.** is saving some trees —and no small amount of money to boot. An initiative to document software on compact discs instead of on volumes of paper documents along with a headquarterswide recycling effort begun at Sun this month will minimize the use of paper, recycle paper that is still in use and additionally recycle wet garbage such as food and everything else from junk mail to Styrofoam to cans and bottles. Sun estimates that the effort will save the firm some $100,000 per year.

Japan's Unix market beckons

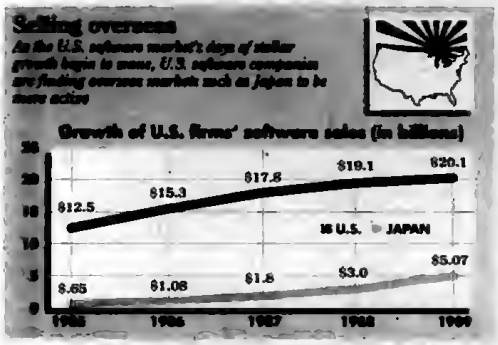
U.S. software firms lay groundwork for reaping Japanese Unix bounty

BY JEAN S. BOZMAN
CW STAFF

SAN FRANCISCO — A determined and patient group of U.S. software companies is poised to jump into a market just opening up in Japan: packaged Unix software. Encouraged by Japanese information systems managers' newfound interest in downsizing mainframe applications, these firms are forging partnerships with well-established Japanese firms to distribute their wares.

The move means potential benefits on both sides of the Pacific: for Japanese users, quick satisfaction of a growing need, and for U.S.-based users, a promising source of the profits their suppliers need to keep the products and services coming.

Informix Software, Inc., Oracle Corp., Hewlett-Packard Co. and Information Builders, Inc. (IBI), among others, have already done their homework: They have had their Unix software translated into Japanese Kanji characters. They have also done some legwork and linked forces with Japan-based firms to provide local distribution and support of the software they sell. And they have shown patience — not always the earmark of U.S.-based firms. IBI, for example, has spent the last 10 years establishing 200 sites in Japan.



Source: Packagesoft/Sentry Market Research

CW Chart: Doreen St. John

Driving this U.S. move into the Japanese market is the promise of a foothold in a packaged software market that was barely $1 billion in 1987 but could reach several times that by 1993, according to market analysts.

The emerging packaged software market in Japan significantly coincides with slowing software sales elsewhere in the world. It also coincides with a move to hardware and software standards in the Unix world, underlined by Japanese membership in the Open Software Foundation, Unix International and X/Open Consortium Ltd.

"After you've gotten your share of the market in the U.S. and Europe, you'll go after your market share in Japan," explained Kate McGee, manager of international affairs at Oracle in Washington, D.C. Oracle is participating in a U.S. Department of Commerce trade mission to Japan, as well as building up its fledgling Japanese subsidiary to become part of a world sales division that brings in half of Oracle's revenue (see story page 90).

"In Japan, they've been using [proprietary] software for so long that they've painted themselves into a corner," said John Korondy, manager of worldwide strategic applications at Palo Alto, Calif.-based HP. "They've put themselves at a relative disadvantage by not being able to use off-the-shelf software."

However, the widespread acceptance of packaged applications for MS-DOS personal computers used in Japanese offices is easing the Japanese transition to packaged Unix software, U.S. software executives said. Bob Macdonald, vice president of corporate marketing at Menlo Park, Calif.-based Informix, sees a turnabout by Japanese IS directors frustrated by long development times for mainframe applications. "They're looking for the same price/performance and flexibility that their counterparts in Europe and the U.S. have had in their operations," Macdonald said.

Even partnership

In preparation for an intensified Japanese sales effort, in 1989 Informix made a 5% equity investment in Tokyo-based Ascii Corp., which publishes software and manufactures computer chips for the Japanese domestic market.

To ensure an even-handed partnership, Ascii acquired 5% of Informix's stock in November 1990; it also holds an option on an additional 5%. The partnership, Macdonald said, gives Informix the benefit of Ascii's market savvy and lets the Japanese firm share Informix's Unix expertise.

Similarly, HP is relying on Canon Ltd. to get its New Wave PC-based software distributed in Japan and may rely on Hitachi Ltd. to resell some of its Unix software in Japan. HP and Hitachi recently reached an agreement by which Hitachi would license software for HP's PA-RISC workstations, while HP would license expert-systems technology developed by Hitachi. Until recently, HP sold all products directly through its Japanese subsidiary.

Increasing demand for Unix may come in part from the rapid buildup of Unix-based workstations in Japanese companies,

Continued on page 90

Study highlights industrial automation

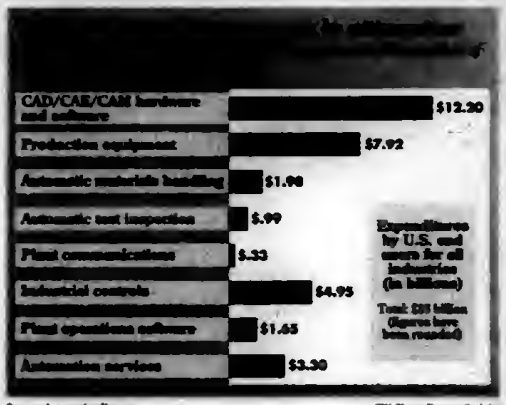
BY GARY H. ANTHES
CW STAFF

WASHINGTON, D.C. — The U.S. computer and office equipment industry is more than just a supplier of industrial automation technology. It is a major user of that same technology, accounting for $1.7 billion of the market.

In 1989, U.S. manufacturers invested $33 billion in industrial automation hardware, software and associated services, according to a study just released by the Automation Forum.

The Automation Forum is sponsored by nine trade associations including the National Electrical Manufacturers Association, the Computer and Business Equipment Manufacturers Association and the National Computer Graphics Association. The forum said the study is the first to reliably measure the U.S. industrial automation market.

The report is a snapshot of current spending, a baseline on which future studies will be built, according to the Automation Forum. It does not attempt to identify trends or make projections.



Source: Automation Forum

CW Chart: Doreen St. John

No service economy

Speaking at an industry seminar at which the study was unveiled, Rep. Don Ritter (R-Pa.) said notions that the U.S. could prosper with an economy dominated by services have now been thoroughly discredited, and he called on the federal government to realign its research and development priorities in favor of manufacturing technologies.

"The 1990s will be the decade of manufacturing, the decade of 'Made in America,'" he said.

In addition, Ritter called for reinstatement of the investment tax credit, "a tax credit of up to 20% for the purchase of productivity-enhancement equipment." He also called for a permanent cut in the capital gains tax rate as a measure to stimulate investment.

Cap Gemini moving to facilities management

BY MARC BENITAH, FREDERIC PELLOUD and LINDA LEWIS
SPECIAL TO CW

PARIS — Europe's leading computer services house, Cap Gemini Sogeti, offers activities ranging from management consulting and professional services to systems integration. However, the company had little involvement in facilities management until earlier this month, when it announced that the field would become one of its major areas of development.

The decision is not surprising given Cap Gemini's July 1990 acquisition of 69.7% of the UK-based facilities management specialist company Hoskyns.

"Compared with our previous majority shareholders — Plessey, followed by General Electric Co. and Germany's Siemens AG — we now have a partner that understands our business," said Geoff Unwin, president of Hoskyns.

In 1990, Hoskyns reported $188 million in facilities management revenue — 48% of the company's total revenue of $391 million. Thus far, Hoskyns' activities have been focused on the UK market, which represented 87% of group revenue last year. However, Cap Gemini is expected to smooth Hoskyns' penetration of foreign markets.

For example, Hoskyns recently signed a major facilities management contract with food products maker Heinz in the UK. "We signed an umbrella agreement with Heinz. [This means] the first country to have been signed is the UK, but in due course, other European countries could well join in," Unwin said.

The Heinz contract, worth several million dollars, has triggered expansion of Cap Gemini's facilities management activities in Europe.

In France, Hoskyns and French software house Cap Sesa are creating a joint venture, Cap Sesa-Hoskyns, 60% of which is owned by Hoskyns and 40% by Cap Sesa. The initial capitalization amount was not disclosed.

According to Unwin, Cap Sesa and Hoskyns have already worked together on the Eurotunnel project and on a telecommunications contract in the UK, where a personal communications network is currently being developed.

Yet another attempt

This is not the first time Cap Gemini has attempted to enter the facilities management arena.

"In 1972 to '74, [Cap Gemini] had a subsidiary in this sector. At the time, we thought that this market would develop significantly, but it obviously wasn't mature," General Secretary Michel Berty said last month.

According to French market researcher Pierre Audoin Conseil, the French facilities management market grew 20% in 1990 to a value of $525 million. UK-based market research group Romtec PLC revealed that the UK market soared 40% last year, a 66% growth over previous years' figures.

Last year, Hoskyns reported $30 million in profit before taxes, despite the fact that it lost a $21 million contract. "[The customer] wanted to take [information systems] in-house," Unwin explained. "Its decision had nothing to do with [Cap Gemini]," he added. On the other hand, Cap Gemini's strength on an international basis now opens up Hoskyns to new opportunities.

Benitah, Pelloud and Lewis write for Le Monde Informatique, *an IDG Communications publication in France.*

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EXECUTIVE CORNER

USL names board roster

Unix System Laboratories, Inc. (USL) recently named eight members to serve as its board of directors. The roster includes President Lawrence Dooling; four AT&Ters including Robert M. Kavner, group executive of data and federal systems; and representatives of three other companies that have invested in USL: Fujitsu Ltd., Novell, Inc. and Ing. C. Olivetti & Co.

3Com Corp. recently named Alan Kessler general manager of its Network Systems Division. Kessler, already vice president of the company, will head up the newly created division, which makes and markets terminal services, structured wiring hubs, protocol software and internetworking products. Kessler formerly held a similar position within 3Com's Distributed Systems Division.

Generic Software, a wholly owned subsidiary of Autodesk, Inc., early this month appointed Peter O'Dell its new president. O'Dell, who comes to the post after four years at Autodesk, replaces Generic Software's acting president, Malcolm Davies, who is Autodesk's senior vice president of marketing and sales.

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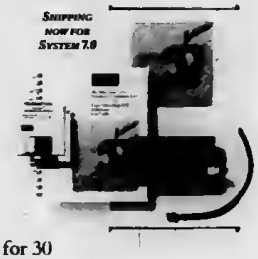

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FROM PAGE 87

Korondy said. "There's a great deal of demand for workstations in the commercial area, particularly in the financial services area. They want the same kind of workstation packages we have here [in the U.S.]."

Other firms take a different tack in selling their wares in Japan. Oracle and IBI sell through Ashisuto, Inc., a distributorship founded in 1972 by Bill Totten, a former Systems Development Corp. market researcher posted to Japan in 1969.

Ashisuto (which means "assistance" in Japanese) has hometown-team advantages. Most of its staff is Japanese, so it can provide local-language support and sell itself as a trustworthy business partner for Japanese firms.

But IBI is also working directly with Japanese computer makers to port its Focus applications development software to new systems. "There's no doubt in my mind that the people who get their product to market first with the [Japanese] national machines will gain market share," said Carl Rosenberg, director of IBI's Unix division.

In April, Rosenberg and Asian regional sales manager Joseph Lui met with several Japanese firms, including Hitachi and Fujitsu Ltd., to explore licensing agreements for IBI's Unix software.

Knowledge of the Japanese market may, in the end, be the U.S. firm's best calling card. "Clearly, the Japanese are looking to downsize many of their mainframe applications," Lui said. "So, we're looking both to our own installed base of Focus software users and to the hardware vendors in Japan to see where the opportunities are for us."

Same boom, different place?

A pool of many millions of dollars is one reason U.S.-based packaged software vendors are flocking to Japan

- In the mid-1980s, sales of all packaged software in Japan amounted to $925 million, compared with $4.5 billion Japanese users were paying for custom software.
- Some 50% of packaged software sales in Japan from 1983 to 1986 were attributed to non-Japanese firms.
- Analysts have projected the Japanese packaged software market to be several times the mid-1980s figures by 1993.

Source: Adapsi CW Chart: Janell Genovese

Oracle pursues Japanese IS market

BY JEAN S. BOZMAN
CW STAFF

TOKYO — Chikara Sano knows how to sell computers to the Japanese information systems market. The 50-year-old executive sold hundreds of boxes for IBM Japan as branch manager of small systems. Now, he has been recruited by software vendor Oracle Corp. to serve as president of its wholly owned Japanese subsidiary and to spearhead Oracle's quest to gain entry to the emerging open systems market here.

From a start of just three employees last year, Oracle Japan will end 1991 with about 40 employees, Sano said. By the end of 1992, he added, the firm should have about 100 employees — some 33% of them in sales and about 20% in support and maintenance.

Additional distribution and support will come from independent software distributor Ashisuto, Inc. (see story page 87), which will assign 50 employees to support Oracle products in Japan. Oracle is already installed at several sites in Japan, including Nissan Motor Co. and Canon Ltd. But Oracle is really building its business from the ground up.

Oracle Japan's Sano *is readying the company to compete in the emerging open systems market in Japan*

To get things going, Oracle is participating in a U.S. Department of Commerce trade mission to Japan — a special program to assist 20 U.S. companies that want greater access to the Japanese domestic market [CW, April 15].

Kanji versions of Oracle's products for selected platforms have been available since 1986. Open systems are not yet widely sold, however. But Oracle is recruiting Japanese software firms as third-party sources of packaged Unix software that can run on relational database applications. "We asked about 100 software companies to attend an open systems seminar last fall," Sano said, "and about 10 companies have started to work with us on Unix database products."

By Sano's standards, things are going very well. The first trade mission, led by U.S. Commerce Secretary Robert Mosbacher in early April, was widely promoted in Japan. "When the delegation arrived and talked with top-level people here, it was broadcast on TV," Sano said. "Everybody watched this program." Personal visits by Oracle Chief Executive Officer Lawrence Ellison have helped, too. Said Sano: "He's supposed to come here once or twice a year — and he's already been here twice."

COMMENTARY

Peter Bartolik

Look back to look forward

I've been struck with a bad case of deja vu. It really hit home when executives at Compaq announced they would buy back stock — which they considered underpriced after revenue forecasts turned downward and were followed immediately by the stock price.

Don't worry, top execs told shareholders, it's just temporary. The company is well-positioned in a growth market, Chairman Ben Rosen said. The current situation won't last long.

My absolute favorite quote of all time is George Santayana's: "Those who cannot remember the past are condemned to repeat it."

The PC industry and the analysts who follow it are surely teasing that truism. Each blip on the PC front is treated in isolation — no trend here, folks — or glossed over with the simplistic explanation that troubles in the dealer channel are just messing things up for everyone else, but it won't last.

Well, it's going to last long enough to shake things up. Yes, Businessland is a situation in and of itself, but with Compaq and Apple struggling with the reality of lowered margins, it's clear the trend is away from paying premium prices for premium labels.

There are hundreds of suppliers in the U.S. who can now go out and buy quality components and slap together a PC just as functional and fully configured as those made by top-tier manufacturers. The difference is they'll sell it to you for a couple of thousand dollars.

There are clearly too many companies equipped with too much technology chasing too few customers. A betting person could easily reach the conclusion that a massive shakeout is looming.

Remember what Compaq executives said about this being a short-term phenomenon. Then think about what executives at Wang, DG, Prime and every other minicomputer vendor said just a couple of years ago when the phenomenon of hot commodity boxes based on RISC technology surfaced.

The excuses then were currency trading problems, short-term economic problems and customers having trouble absorbing the technology they'd already purchased. The excuses are much the same today, but the fundamental problem comes down to the wide availability of quality components and the growth of alternative distribution channels — factors that make it easier for usurpers to come in with rock-bottom prices and steal business from larger companies.

Businessland may be about to give up the ghost, but Compaq will very likely weather the storm. With no direct sales force to support and a traditionally low investment in research and development, it merely has to return to its roots: the days when it climbed ahead of the pack by offering something better than IBM at a lower price. Now others see Compaq as the IBM of the '90s: someone to undercut and outmaneuver.

But what happens if and when big companies such as Compaq make the transition? It will put pressure on the Dell Computers of the world. And when the Dells respond, it will put pressure on the Northgates, and so on and so on.

Those who can't respond will fall out at the bottom. And the bottom will consist of companies that insisted there was nothing to respond to.

Bartolik is *Computerworld's* news editor.

INTERNATIONAL

BRIEFS

The sharing of the green

▶ Computer documentation services player **R. R. Donnelley and Sons Co.** in Chicago and computer services provider **B. G. Turnkey Services Ltd.** in **Cork, Ireland**, last week teamed up to offer production and distribution aid to European firms. The new joint venture company, **Turnkey Services International**, will leverage its founders' strengths to become a full-service vendor, executives at both firms said — and will also increase each founder's footholds in the burgeoning European market. Turnkey Services International's introduction followed by one month R. R. Donnelley's opening of a plant in Singapore — a move that made the firm the first to offer documentation services to both hardware and software vendors in the U.S., Europe and the Pacific Rim, a company spokesman said.

We are and are not Acer

▶ Stung by slow U.S. sales and lagging profits, Taiwan's **Acer, Inc.** plans to sell its low-end personal computers in the U.S. market under the name Acros, according to company President Leonard Liu. The Acros name will be used to penetrate the mass merchandising channel, Liu said in a midmonth interview with the Taiwan business press; the firm's Acer and Altos product names will be reserved for high-end products.

Green light

▶ By Jan. 1, 1993, **European Community** (EC) rules guaranteeing harmonized copyright protection for software will be enforced in all 12 EC member states, following a mid-May formal directive by the EC's Council of Ministers. An EC spokesman quoted in the Belgian business press said that the decision "concludes an important and sensitive debate" and respects a balance of interest among all parties concerned.

Gotcha

▶ London-based manufacturing software specialist **Kewill Systems** continued down the takeover trail with its recent acquisition of Stuttgart, Germany-based **Weigang MCS GmbH**. Kewill is reportedly paying an initial $707,520 for the production control and manufacturing software house, with up to $766,480 more to follow, depending on performance. Kewill has been quietly snapping up companies during the last year.

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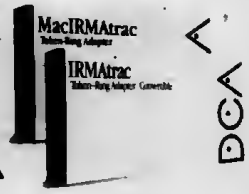

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COMPUTER CAREERS

How IS execs can fill business-skills gaps

BY ALICE LAPLANTE
SPECIAL TO CW

Part II of a two-part series.

Cobol and Fortran programmers at Standard Insurance are suddenly finding their career paths coming to an abrupt dead end. Once valued for their coding abilities, the programmers are now becoming obsolete as the company's aggressive move to fourth-generation languages is allowing inexperienced users to write their own programs.

"People who a year ago never cut a line of code are developing entire systems on their own," says David Schmaltz, supervisor of process management and control. "Technology is becoming a much less significant part of development here," he says.

Each firm has a different story about why its technical professionals need to broaden their skills. A common theme is that information systems professionals need a better understanding of users' needs and the company's business. Fortunately, IS managers are successfully finding ways to meet this challenge.

One method for IS employees to pick up critical business knowledge is by working with end users, IS managers say.

For example, at Union Camp Corp. in Wayne, N.J., IS employees are assigned to work with specific end-user departments over extended periods of time. This way, they become intimately involved in the actual, hands-on business processes of the users, says John Ineson, director of corporate IS.

However, this method has its drawbacks, according to Dennis J. Murphy, director of corporate information management consulting and support at GTE Corp. in Stamford, Conn. Specifically, the IS employee could get pigeonholed into a certain business department and his career options become limited as a result.

Assignment at risk

Assigning an IS professional to an end-user department is risky, unless there is a follow-through project or an education or training effort to help make that individual more marketable to other departments or other corporations, Murphy says.

Brunswick Bowling & Billiards in Muskegon, Mich., found shorter term rotational assignments to be a better solution. "I move people in and out of end-user departments for the duration of projects and keep them moving so I can train people across the entire business spectrum," says Brian Ellis, director of MIS at Brunswick. He says he's seen greatly increased productivity and happier employees all around as a direct result.

"IS workers see their career options widening up, and end users are much happier with the systems they get," Ellis says.

However, relying on end users to train IS staff is inefficient and wastes corporate time and money because of a basic lack of understanding resulting from different backgrounds, educations and vocabularies, says Charles J. Lasky, director of MIS at Dorr-Oliver, Inc. in Milford, Conn.

"You take people with a pure business background and put them in a room with technical people, and it takes a long time before they find some common ground and begin to communicate," Lasky says. "There's also room for miscommunication and confusion, and that, ultimately, means money wasted."

Lasky says he believes that for their own good, IS employees shouldn't be passive about picking up basic business skills. He strongly recommends supplementing technical training or experience with the kinds of entry-level marketing, accounting and finance courses found at any community college.

Lasky builds a strong case for an IS worker supplementing business skills picked up on the job with a more formal education — even if the employee has to pay for the classes out of his own pocket. Three years ago, Lasky was forced to lay off some of his IS staff. The person who had the hardest time finding another job had quite a bit of on-the-job accounting experience, but her experience was too specific to that particular company and didn't translate into a more universal understanding of key business concepts.

"Interviewers were asking her general financial questions she simply couldn't answer because all her knowledge revolved around our particular system," Lasky says.

Clement Kichuk, president of Marketcorp Systems in Westport, Conn., strongly recommends that IS employees get an MBA — no matter what their eventual career goals. "The more people you have who understand the big picture, the less meetings you need between the technical and business teams," says Kichuk, who says he believes miscommunication between business and technical employees is the reason most projects fail.

LaPlante is a free-lance writer based in Palo Alto, Calif.

Walking a fine line

Generally, IS managers agree: If professionals do not elect to head down a more end-user or business-oriented path, they should become highly specialized technical gurus rather than remain as technology generalists. The Cobol or Fortran programmer who refuses to either learn C or cooperate with end users will be the first IS employee handed a pink slip during an economic downturn.

However, the technical path is not necessarily an easy one. Bob Holmes, manager of systems evaluation at Southern California Gas Co. in Los Angeles, warns that in this age of rapidly advancing technology, choosing the route of keeping up with the latest products and environments can be a daunting challenge.

"To keep up to date on the latest technologies, you will need to invest a lot of your own time beyond the normal working day," Holmes says.

However, choosing a technical route doesn't necessarily make an IS employee exempt from having to participate in the day-to-day business of the organization.

At Cigna Systems, the systems arm of Cigna Corp. in Philadelphia, President Raymond Caron says that even when hiring the most technical worker, he expects a basic understanding of business issues.

"When I hire someone, I want to see the languages they know, the systems they've implemented — all the technical stuff," Caron says. "But I want to hear it described in business terms."

ALICE LAPLANTE

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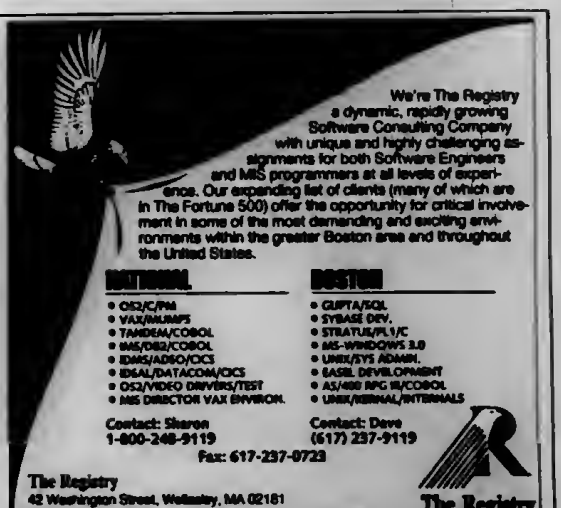

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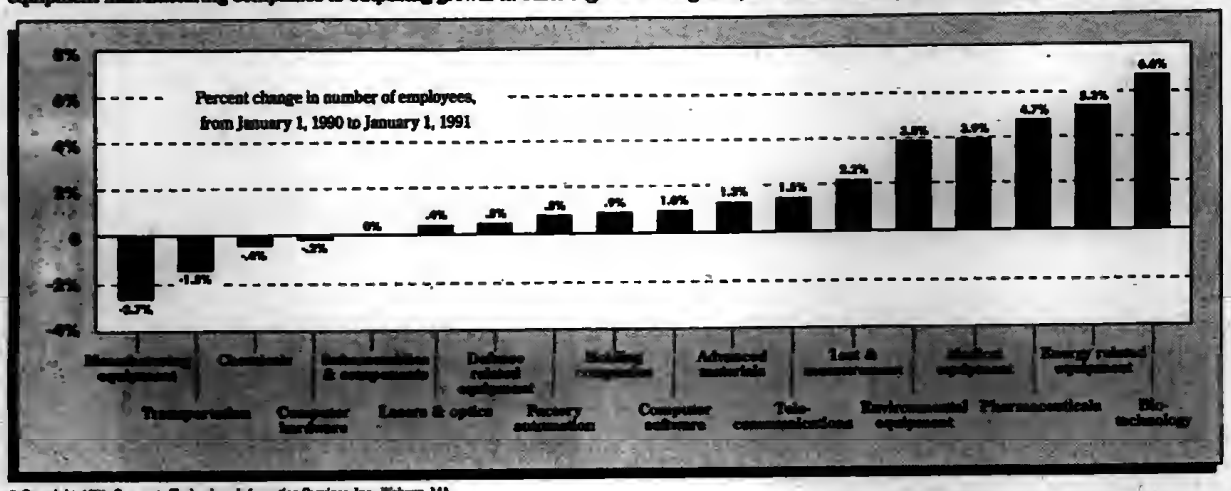

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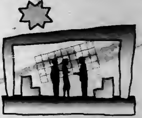

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Low-cost imaging tools enter the PC picture

BY ELLIS BOOKER
CW STAFF

The arrival of inexpensive desktop document imaging systems is a cause for joy among sophisticated personal computer users eager to eliminate the paper load in their inboxes.

However, information systems executives, who may be in the process of charting their companies' enterprisewide imaging strategy, are viewing this development with trepidation.

They're concerned about the compatibility of a hodgepodge of small, inexpensive systems at the departmental level and that these systems will not be able to use existing corporate resources such as mainframe databases.

In short, they're worrying about a repeat of the PC onslaught of the 1980s.

"Letting an individual or a department put in its own imaging solution is the same as letting them come up with their own records management policy," says David Lebenson, vice president and chief information officer at Cedars Medical Center in Miami.

However, while Lebenson runs a tight ship at Cedars, other companies are seeing a tidal push for imaging coming from the bottom up; that is, from users and departments. "Ninety percent of the projects I have been involved with started with users, who then lobbied MIS," says Allen W. Harris Jr., who directs the image systems practice at Ernst & Young in New York.

IS in control

One approach IS can take is to encourage individual departments to explore the technology but offer guidance and a comprehensive review process to ensure compatibility of the systems down the line.

That is how John J. Clark, director of systems planning and development at the pharmaceutical division of Ciba-Geigy Corp., handled the issue.

Last year, with a major imaging pilot under way in one department and "pockets" of interest in others at the Summit, N.J.-based firm, Clark realized, "If we don't do something about this, we will end up with the same situation we had with word processing." The difference this time, he says, is that integrating many different imaging products and approaches after the fact would be even more expensive.

Clark's solution was to produce a six-section guideline, which he introduced to the company's decentralized IS staffs in a one-day workshop.

Clark's publication has sections on needs assessment, hardware and software, the state of the industry, trends and the manner in which these will affect Ciba-Geigy's existing information systems. It also contains a detailed section on how individual departments should construct a request for proposal and a glossary of terms. Complementing the guidebook is a rigorous, centralized approval process.

Companies that have "multiple [imaging] solutions running around" but lack these controls are due for some expensive shocks, Clark predicts.

Prices falling

The root cause of all this interest is the tumbling cost of imaging technology.

A decade ago, the handful of vendors with imaging solutions to sell used highly customized software and hardware. At the time, the systems cost millions of dollars and were few and far between.

By 1984, the price had dropped to between $500,000 and $600,000 for a four-user solution. Two years ago, the price per workstation fell to $30,000, thanks largely to a move to commercial hardware platforms.

Today, a crop of companies are selling PC-based software systems that they claim can image-enable Intel Corp. 80386-class PCs for $500 to $1,500 a shot.

It's important to note that many "enterprisewide" imaging systems also use PCs as clients, with either Unix or proprietary servers. At issue are those packages, now part of a frenetic low end of the imaging market, for single workstations and small networks.

According to a January forecast from BIS Strategic Decisions in Norwell, Mass., the market for stand-alone systems with up to three workstations will grow 326.6%, from 1,153 sites to 3,766, by next year. Workgroup systems, those four to 15 workstations on a local-area network, will grow 288%, from 995 sites last year to 2,868 by 1992.

Together, this segment of the imaging market represents 75% of all imaging systems installed and 31% of the market last year, BIS reports.

Now appearing

New systems are debuting all the time. Last week at Comdex/Spring '91 in Atlanta, for example, Westbrook Technologies, Inc. introduced Imagic, an $895 software-based package for 80386 PCs.

Like many recent PC imaging packages, it uses Microsoft Corp.'s Windows 3.0 environment as a front end.

"We're not trying to sell the MIS director," explains Dennis Graham, president of the Westbrook, Conn., company. Users needn't spend $25,000 per terminal to deploy an imaging solution, he adds.

However, Graham has anticipated concerns about a "stand-alone" solution and promises an announcement within 90 days on Westbrook's networking game plan.

But will the bustling PC-level market compel big-name companies now pushing enterprisewide solutions into this market?

"I don't think so. There's so much business at the high end that they can ignore it for a while," says Donna M. Amrhein, editor of *Imaging Business Report*, a BIS publication.

Booker is *Computerworld*'s Chicago bureau chief.

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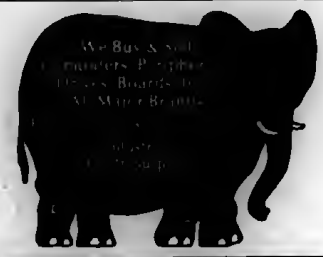

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AT Model 339	$750	$1,000	$700
PS/2 Model 30-286	$1,050	$1,300	$1,000
PS/2 Model 60	$1,300	$1,700	$1,300
PS/2 Model 70P	$3,000	$3,500	$3,000
Compaq Portable II	$750	$1,050	$700
Portable 286	$1,100	$1,350	$1,000
SLT 286	$2,100	$2,200	$1,900
Portable 386	$2,000	$2,100	$1,500
LTE 286	$1,950	$2,200	$1,800
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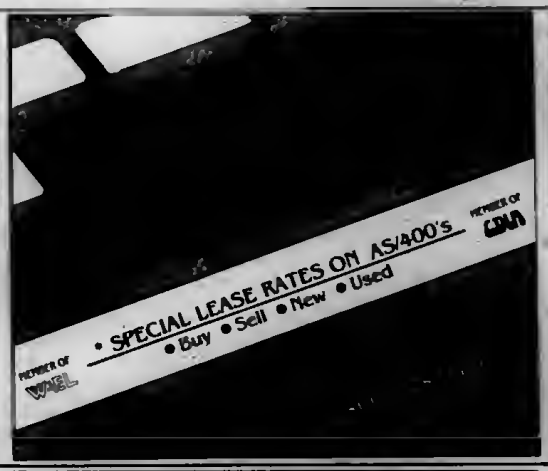

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Digital multimedia to improve training

BY MARK FRITZ
SPECIAL TO CW

Although multimedia has become common on the training scene, a more exotic offshoot of the family tree has been taking root recently. Digital multimedia — which packs the power of full-screen, full-motion, VCR-quality video and audio on a personal computer — has been drawing praise from trainers and users for the simplicity with which it handles procedures ranging from course design to hookups to remote locations.

Basically, digital multimedia differs from analog-based interactive videodisc (IVD) in that trainers and users can translate analog video signals to work with video on a computer. One of the key technical advantages is that digital video enables images and motion to be kept on a PC's storage device and does not require a videodisc player.

Currently, Intel Corp. is offering a Digital Video Interactive (DVI) chip for 80286- and 80386-based PCs. Other companies such as LSI Logic Corp. and C-Cube Microsystems, Inc. are following suit but are not yet ready to deliver their versions.

So far, trainers and users are saying that digital multimedia is a boon to training for the following reasons:

- Training can be embedded within applications not only to teach users how to use a particular function but also to serve as a highly interactive, hands-on Help facility.
- Course materials are relatively easy to develop and maintain.
- Applications can be networked or distributed to remote sites.
- Initial investment is less than that for IVD.

According to trainers and technical users, embedded training is a particularly attractive feature of digital multimedia. "If you become stuck trying to learn how to enter a formula in Lotus [Development Corp.] 1-2-3, you could double-click and go to a Help menu. Or a video window could pop up, with someone actually typing a formula into a cell," says Joan-Carol Brigham, an analyst at Framingham, Mass.-based International Data Corp.

Andersen Consulting in Dallas is currently using DVI to develop an application that embeds two kinds of training for a major retailer, says Reinhard Ziegler, a senior manager in the Change Management Services Division.

The application will teach customer service representatives how to use on-line customer information systems and how to improve their customer service job skills. DVI training will be delivered in a window that will pop up on top of a mainframe information system.

Also ranking high on trainers' lists is easy course development and manipulation of materials.

For example, at San Antonio-based Southwest Research Institute, digital multimedia permits quick development of courseware by streamlining the planning and preproduction process, says Katharine Golas, manager of the instructional systems section. "We can now polish our instructional design on the computer as we are working."

In addition, Golas says, trainers can manipulate digital images to cut down on video filming time. "If you were to film a row of switches with analog video, and that switch had 1,000 different settings, you would have to shoot it 1,000 times. But with a digital medium, you just shoot the switch once and manipulate it with software by cutting and pasting," she says.

One potential benefit of digital multimedia is that it could allow trainers to deliver training to remote sites, says Jean Korb, a manager in the management consulting group at Deloitte & Touche in Washington, D.C. For example, a systems operator could use digital multimedia to learn how to perform minor system repairs or cabling, she says.

But perhaps the most attractive feature of digital multimedia is that it is more cost-efficient than its predecessor, IVD. For example, Ziegler says that as a service to a client, his company did a price comparison between the cost of using DVI and the cost of using IVD for an operation with 150 workstations. The result, Ziegler says, showed that hardware outlay and distribution of courseware was 20% less expensive with DVI.

In a less formal estimate, Golas speculates that DVI can undercut IVD training development costs by 30%.

Not a perfect route

As with any relatively new technology, there will be some bumps in the road: One, there is a small learning curve; and two, digital multimedia isn't necessary for all kinds of training and it isn't perfect.

"Like anything you've never used before, DVI presents a learning curve," Golas says. But the curve was much steeper for those who got involved with DVI early on, before authoring systems were available, she adds.

Ziegler says that digital multimedia should be used selectively in IS training. "You have to ask yourself, 'Do I really need motion video to simulate this application?' " he says. The more complex a software application is, the more useful digital multimedia will be to its training.

But Korb cautions: "Just as a good computer and development language will not assure a good application, DVI will not assure effective learning."

Fritz is a free-lance writer based in Dedham, Mass.

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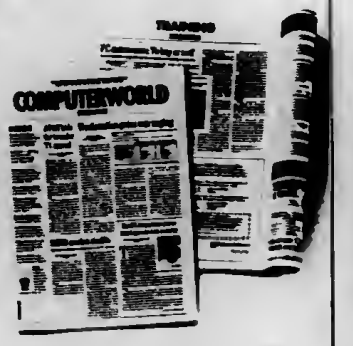

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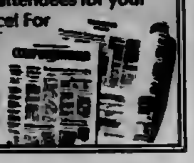

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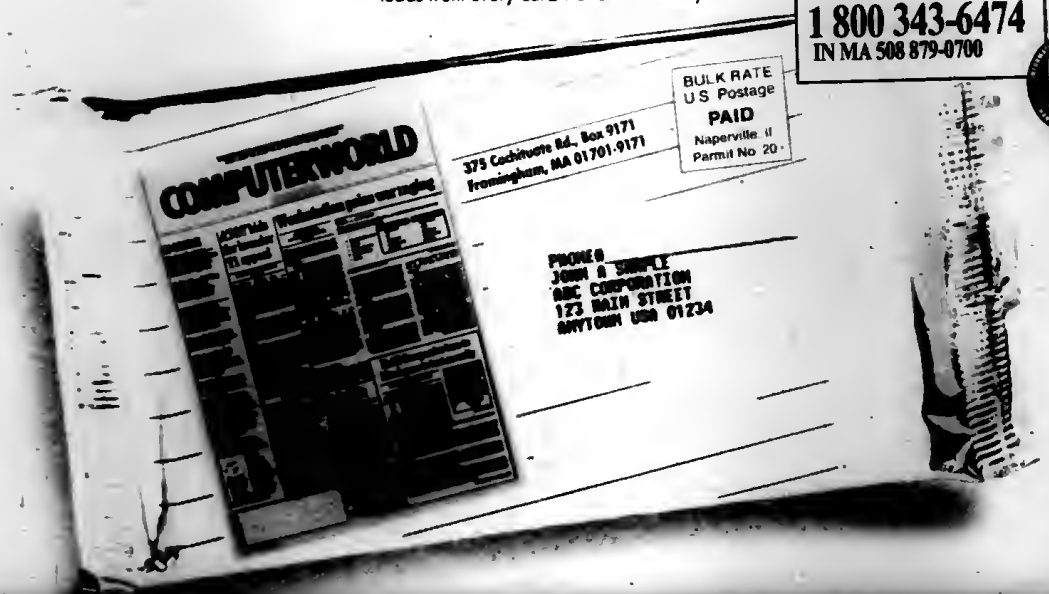

INDUSTRY ALMANAC

ANALYSIS IN BRIEF

Microcomputer systems. The price wars in the personal computer industry will not decimate earnings, as some predicted. The slashed prices are not that much lower than they were before.

However, it is true that price issues, along with competition around new product introductions, will realign market share. The current downturn in the U.S. economy compounds these business risks.

Four factors determine whether a PC company will succeed: competitive pricing, broad product offerings, short product development intervals and a well-managed position in the reseller channel. By these measures, **Compaq Computer Corp., Apple Computer, Inc.** and **AST Research, Inc.** are well-positioned for good growth. Second-tier companies such as **Dell Computer Corp.** must enlarge their positions in the reseller circuit.

Microcomputer software. Meanwhile, PC software tool makers are gaining visibility — and significance — in the industry. Their products make cross-platform applications development less risky for both users and vendors. Consequently, their products are becoming more popular. Watch **Spinnaker Software Corp.** and **Borland International, Inc.**, for example, emerge as strong forces in the PC tools segment. — *PC Hardware/Software remains a leadership sector, Shearson Lehman Brothers, Inc., May 15, 1991.*

RECOMMENDATION CHANGES

UPGRADED FROM NEUTRAL TO ATTRACTIVE: **Microage, Inc.** (Mabon, Nugent & Co.). Reason: Recently reported lower-than-expected sales were caused, in part, by nonrecurring factors, including distribution center start-up costs. The new, more efficient center should help the company reap rewards of increased orders if the economy picks up in the second half of 1991.

DOWNGRADED FROM ATTRACTIVE TO NEUTRAL: **Compaq** (Mabon, Nugent). Reason: Price is now the differentiating factor in the PC market; so-called second-tier clone makers are penetrating corporate accounts, and Compaq's attempts to compete will come at the expense of profits.

DOWNGRADED FROM BUY TO HOLD: **Compaq** (Bear Stearns & Co.). Reason: Mergers and acquisitions among PC dealers have clogged inventories; sales and profit growth are expected to drop this quarter because of slow U.S. demand.

DOWNGRADED FROM BUY TO HOLD: **Intel Corp.** (Bear Stearns). Reason: Major customers, including IBM and Compaq, will probably cut orders; Compaq has indicated that it will try to bring inventories in line with revised sales expectations, and IBM's Personal System/2 line is sluggish.

DOWNGRADED FROM BUY TO HOLD: **IBM** (Duff & Phelps Investment Research Co.). Reason: Increasing unpredictability of earnings coupled with lower profitability and higher debt spell uncertainty; company claims its problems lie in lagging economies worldwide, but first-quarter sales declined across virtually all product lines.

UPGRADED FROM OUTPEFORM TO BUY: Micron Technology, Inc. (Shearson Lehman Brothers). Reason: Higher earnings prospect than previously predicted; semiconductor stocks expected to perform well during the next year.

KIM S. NASH

STOCK TRADING INDEX

THIS WEEK'S HIGHLIGHTS

- Shares in small systems makers saw mixed action last week. Apple Computer, Inc. continued to slide, losing 3½ points to close Thursday at 45½. Hewlett-Packard Co. gained 2⅞ points to 50⅞. HP recently unveiled a new low-priced workstation.
- Compaq Computer Corp. picked up one point, closing at 36¾. Compaq lost nearly 30% of its value recently after word got out of a profit drop this quarter.
- Elsewhere, quarterly sales at Advanced Micro Devices, Inc. (AMD) surpassed estimates. AMD shares zoomed 1¾ points to 12⅞, while Texas Instruments, Inc. tumbled 1⅜ points to 36¾. Zilog, Inc. closed Thursday at 14, accruing 1⅜ points last week.
- Network firm Synoptics Communications, Inc. advanced 2⅞ points to 33⅝. Cabletron Systems, Inc. rose 2⅝ points to 36⅛, regaining some of the 5⅞ points it lost the week before last. Cisco Systems, Inc. closed at 31, up 2 points for the week.

Computerworld Friday Stock Ticker

CLOSING PRICES FRIDAY, MAY 24, 1991

TOP PERCENT GAINERS

Bolt, Beranek & Newman	37.78
Televideo Systems	29.71
Dataport Corp.	27.27
Phoenix Technologies	27.08
Selecterm Inc.	20.00

TOP PERCENT LOSERS

Computer Automation Inc.	-25.00
Alliant Computer Sys	-12.50
Cognos Inc.	-11.26
Intersolv	-11.11
Tandon Corp.	-10.52

TOP DOLLAR GAINERS

Microsoft Corp.	10.75
Aldus Corp.	5.50
Borland Int'l	5.38
Computer Sciences	4.00
Cabletron Systems	3.63

TOP DOLLAR LOSERS

Cognos Inc.	-1.88
Bell Atlantic Corp.	-1.88
Knowledgeware Inc.	-1.38
Cray Research Inc.	-1.13
Pacific Telesis Group	-1.13

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Exch	52-Week	Range		May 24 Close	Wk Net Change	Wk Pct Change
OTC	19.00	3.88	3COM Corp.	7.25	-0.13	-1.88
NYS	68.75	52.50	American Info Techs Corp.	58.25	-0.13	-0.21
NYS	44.13	29.00	AT&T	38.00	0.00	0.00
OTC	8.50	0.88	Ariel Communication Corp.	2.00	-0.13	-5.88
NYS	58.25	38.80	Bell Atlantic Corp.	45.75	-1.38	-2.92
NYS	57.25	47.50	Bellsouth Corp.	48.25	-0.38	-0.77
NYS	44.00	13.13	Cabletron Systems	36.13	3.63	11.15
OTC	25.88	8.25	Compression Labs Inc.	17.75	-0.38	-2.07
NYS	41.25	23.88	Contel Corp	41.00	0.00	0.00
OTC	5.13	2.75	Data Switch Corp.	4.25	0.25	6.25
NYS	26.13	8.88	Digital Comm. Assoc.	16.00	-0.50	-3.00
OTC	25.25	12.25	Dynatech Corp.	20.50	-0.25	-1.20
OTC	12.88	5.50	Fibronics Int'l Inc.	8.13	0.00	0.00
OTC	4.00	1.75	Gandalf Technologies Inc.	3.25	-0.38	-10.34
NYS	4.50	1.63	General Datacomm Inds.	3.25	0.25	8.33
NYS	33.50	25.50	GTE Corp	35.50	-0.13	-0.42
NYS	60.88	40.25	ITT Corp	58.38	0.50	0.86
OTC	44.13	17.88	MCI Communications Corp.	29.00	0.25	0.87
OTC	20.25	2.75	Microcom Inc.	7.00	0.50	7.69
NYS	10.88	4.00	Network Equipment Tech	8.63	-0.13	-1.43
OTC	14.63	4.00	Network General	7.63	-0.38	-4.88
OTC	13.50	8.13	Network Systems Corp.	11.63	0.13	1.08
NYS	37.13	22.13	Northern Telecom Ltd	36.88	0.63	1.72
OTC	58.50	17.25	Novell Inc.	53.75	1.25	2.38
NYS	88.50	67.00	Nynex Corp.	70.50	1.75	2.89
NYS	47.50	38.25	Pacific Telesis Group	39.00	-1.13	-2.80
ASE	13.88	4.75	Penril Corp	14.00	0.00	0.00
NYS	26.13	8.88	Scientific Atlanta Inc.	13.75	-0.13	-0.90
NYS	58.88	47.25	Southwestern Bell Corp.	50.00	-0.13	-0.25
NYS	48.38	20.63	United Telecom	25.75	-0.50	-1.63
NYS	40.75	32.88	US West Inc.	36.38	0.25	0.69

Computer Systems — Up 3.08%

Exch	52-Week	Range		May 24 Close	Wk Net Change	Wk Pct Change
OTC	8.75	0.56	Alliant Computer Sys.	0.88	-0.13	-12.50
ASE	18.88	10.00	Amdahl Corp.	18.13	0.00	0.00
OTC	73.25	24.88	Apple Computer Inc.	45.88	-1.00	-2.13
OTC	13.88	4.25	Archive Corp.	6.63	-0.13	-1.88
OTC	32.75	7.50	AST Research Inc.	22.88	0.88	4.07
NYS	7.73	4.00	Bolt, Beranek & Newman	7.75	2.13	37.78
NYS	21.63	4.50	Commodore Int'l	16.25	1.00	6.68
NYS	74.25	38.38	Compaq Computer Corp	37.00	1.25	3.50
OTC	2.13	0.13	Computer Automation Inc.	1.13	-0.38	-25.00
NYS	21.13	8.75	Control Data Corp.	11.13	0.13	1.14
NYS	20.88	8.38	Convex Computer	16.75	0.63	3.88
NYS	81.25	40.00	Cray Research Inc.	32.38	-1.13	-3.38
NYS	18.13	3.50	Data General Corp.	13.63	1.50	8.52
NYS	3.25	0.75	Dataport Corp.	1.75	0.38	27.27
OTC	30.63	8.25	Dell Computer Corp	24.50	2.13	9.50
NYS	95.13	48.50	Digital Equipment Corp.	63.75	0.75	1.13
NYS	38.13	13.75	Harris Corp	25.13	-0.38	-1.47
NYS	58.13	24.88	Hewlett Packard Co.	50.88	2.75	5.71
NYS	139.75	98.25	IBM	108.88	1.13	1.08
OTC	14.00	7.75	Information Int'l	8.00	-0.25	-3.03
OTC	31.50	10.50	Intergraph	29.00	1.75	6.42
NYS	2.75	0.50	MAI Systems Corp.	0.88	0.00	0.00
NYS	149.75	114.00	Matsushita Electronics	119.75	0.50	0.42
OTC	28.00	9.00	Mentor Graphics Corp.	13.75	1.63	10.74
NYS	104.25	44.50	NCR Corp.	103.75	1.13	1.10
OTC	38.25	11.00	Pyramid Technology	22.75	0.00	0.00
OTC	34.00	9.75	Sequent Computer Sys.	14.00	1.00	7.69
NYS	47.25	18.00	Silicon Graphics	32.13	-0.50	-1.53
NYS	37.25	14.63	Stratus Computer Inc.	30.88	0.75	2.49
OTC	38.63	13.00	Sun Microsystems Inc.	34.88	0.38	1.09
NYS	28.88	8.88	Tandem Computers Inc.	13.50	1.00	8.00
NYS	58.50	25.50	Tandy Corp.	31.25	0.75	2.46
OTC	32.00	8.75	Teradata	13.75	1.50	9.84
NYS	7.88	1.88	Ultimate Corp	3.00	0.25	9.25
NYS	13.88	1.75	Unisys Corp.	3.88	0.00	0.00
ASE	5.75	2.00	Wang Labs Inc. (b)	2.88	-0.12	-4.17

Software & DP Services — Up 2.34%

Exch	52-Week	Range		May 24 Close	Wk Net Change	Wk Pct Change
OTC	63.00	17.00	Adobe Systems Inc.	49.25	2.00	4.23
OTC	13.50	7.00	Aicorp	7.50	-0.63	-7.69
OTC	59.88	30.25	Aldus Corp	50.50	5.50	12.22
OTC	38.50	12.00	American Mgmt. Systems	27.38	0.50	1.87
OTC	18.25	7.50	American Software Inc.	11.75	0.75	6.82
NYS	4.63	1.88	Anacomp Inc.	3.50	0.00	0.00
OTC	33.50	10.00	Analysts Int'l	13.50	0.25	1.84
OTC	13.25	4.88	Ashton Tate	9.38	0.88	10.25
OTC	10.25	4.00	ASK Computer Sys.	8.00	0.25	3.23
NYS	37.00	22.63	Auto Data Processing	52.50	1.13	3.88
OTC	60.25	32.00	Autodesk Inc.	55.88	1.13	2.06
OTC	31.50	18.50	BGS Systems Inc.	26.25	-0.75	-3.75
OTC	43.88	17.73	BMC Software Inc.	37.50	1.75	4.80
OTC	21.50	11.00	Boole & Babbage Inc.	12.50	-0.25	-1.96
OTC	64.25	14.50	Borland Int'l	52.13	5.38	11.50
NYS	8.75	0.44	Businessland Inc.	0.88	0.00	0.00
OTC	20.88	5.13	Cognos Inc.	14.75	-1.88	-11.26
NYS	18.88	4.38	Computer Associates	9.13	1.38	17.74
OTC	17.75	9.50	Computer Horizons	10.88	0.00	0.00
NYS	73.25	48.75	Computer Sciences	52.25	4.00	8.32
NYS	11.75	6.63	Computer Task Group	8.88	-0.38	-3.85
OTC	25.25	13.00	Comshare Inc.	13.00	0.38	2.98
OTC	18.00	8.75	Corporate Software	10.25	-0.13	-1.20
NYS	49.00	27.88	General Motors E (EDS)	47.50	0.75	0.88
OTC	18.75	7.25	Goal Systems Int'l	12.75	-0.88	-6.42
OTC	7.00	1.88	Hogan Systems Inc.	6.13	-0.13	-2.00
OTC	22.88	7.75	Information Resources	22.88	3.13	15.83
OTC	17.50	2.63	Informix Corp	6.06	0.44	7.75
OTC	7.88	1.88	Intellicorp Inc.	1.75	0.19	11.98
OTC	8.25	2.50	Interleaf Inc.	3.50	0.13	1.88
OTC	18.88	6.88	Intersolv	8.00	-1.00	-11.11
OTC	43.25	10.00	Knowledgeware Inc.	29.88	-1.38	-4.40
OTC	46.00	16.75	Legent Corp	27.50	-0.50	-1.79
OTC	39.25	12.50	Lotus Development	33.13	0.25	0.76
OTC	32.00	13.63	Micrografx	15.50	-0.50	-3.13
OTC	117.50	60.75	Microsoft Corp.	110.00	10.75	10.83
NYS	10.50	4.00	On Line Software Int'l	8.50	0.13	1.49
OTC	28.00	4.88	Oracle Systems	8.50	0.50	6.25
NYS	14.63	7.00	Pansophic Systems	11.50	-0.25	-2.15
OTC	8.25	1.25	Phoenix Technologies	7.63	1.63	27.08
NYS	52.00	33.38	Policy Management Sys.	48.88	0.38	0.82
NYS	25.63	11.50	Reynolds & Reynolds	20.88	0.50	2.45
OTC	25.50	14.75	SEI Corp.	25.88	0.00	0.00
OTC	22.88	12.88	Shared Medical Systems	22.88	1.00	4.88
OTC	35.25	12.00	Software Publishing Corp.	18.75	-0.50	-2.60
NYS	14.63	8.50	Sterling Software	13.50	0.75	5.88
OTC	26.00	8.50	Sungard Data Sys.	18.00	0.00	0.00
OTC	55.88	17.75	Symantec Corp.	42.75	-1.00	-2.29
NYS	24.50	4.50	System Center Inc.	8.50	0.25	3.03
OTC	37.25	12.50	System Software Assoc.	13.75	-0.50	-3.51
OTC	27.38	4.75	[illegible]	11.75	-0.38	-3.08

Semiconductors — Up 4.24%

Exch	52-Week	Range		May 24 Close	Wk Net Change	Wk Pct Change
NYS	14.25	3.63	Advanced Micro Devices	13.00	2.00	18.18
NYS	12.50	8.00	Analog Devices Inc.	10.75	0.00	0.00
OTC	21.75	3.25	Chips & Technologies	9.50	0.13	1.33
OTC	55.25	28.00	Intel Corp	31.00	2.00	3.13
NYS	13.00	3.13	LSI Logic Corp.	10.25	0.38	3.80
NYS	13.13	6.75	Micron Technology	14.88	0.88	6.25
OTC	21.25	7.25	MIPS Computer Systems	13.13	0.75	4.88
NYS	68.88	45.75	Motorola Inc.	68.88	2.25	3.39
NYS	9.00	3.00	National Semiconductor	7.00	0.00	0.00
NYS	47.63	22.50	Texas Instruments	37.13	-1.38	-3.56
OTC	12.25	3.00	VLSI Technology	10.00	1.00	11.11
ASE	14.88	4.00	Western Digital Corp.	4.75	-0.13	-3.88

Peripherals & Subsystems — Up 1.77%

Exch	52-Week	Range		May 24 Close	Wk Net Change	Wk Pct Change
OTC	2.75	0.88	Aperture Technologies	2.25	0.06	2.63
OTC	24.00	7.50	Banctec Inc.	12.75	-0.25	-1.92
OTC	17.50	4.25	Cambex Corp.	11.50	-0.25	-2.13
ASE	11.73	4.13	Cognitronics Corp.	8.13	-0.50	-5.80
NYS	31.25	14.63	Conner Peripherals	30.50	1.25	4.27
ASE	22.00	7.50	Dataram Corp.	8.88	0.00	0.00
NYS	13.00	4.25	EMC Corp.	11.25	0.00	0.00
NYS	47.25	33.75	Eastman Kodak Co.	41.00	-0.13	-0.30
OTC	11.25	4.75	Emulex Corp	8.50	-0.38	-4.23
OTC	33.50	14.00	Evans & Sutherland	18.75	-0.88	-4.49
OTC	8.50	3.88	Iomega Corp.	5.50	-0.06	-1.13
OTC	28.25	8.75	IPL Systems Inc.	23.50	1.00	4.44
OTC	1.63	0.13	Masstor Systems	0.75	-0.06	-7.75
OTC	17.00	2.63	Maxtor Corp	4.25	0.00	0.00
OTC	13.00	4.88	Micropolis Corp.	13.13	1.63	12.04
NYS	93.75	73.63	3M Corp	87.88	0.75	0.86
OTC	14.50	8.00	Printronix Inc.	7.50	0.50	7.14
NYS	34.75	8.50	QMS Inc.	20.75	0.25	1.22
OTC	18.25	8.25	Quantum Corp.	11.88	0.38	3.26
NYS	7.63	4.88	Recognition Equipment	7.38	0.00	0.00
OTC	11.50	4.00	Rexon Inc.	8.63	0.50	3.48
OTC	18.88	8.63	Seagate Technology	10.75	-0.88	-7.53
NYS	47.00	11.00	Storage Technology	43.38	1.88	4.52
OTC	4.75	1.25	Tandon Corp.	3.19	-0.38	-10.52
NYS	88.88	11.63	Tektronix Inc.	23.25	2.50	12.05
OTC	0.63	0.19	Televideo Systems	0.41	0.09	29.71
NYS	60.13	39.00	Xerox Corp	57.88	2.63	4.76

Leasing Companies — Up 4.05%

Exch	52-Week	Range		May 24 Close	Wk Net Change	Wk Pct Change
OTC	18.25	7.50	Amplicon Inc.	14.75	-0.75	-4.84
NYS	38.88	14.63	Comdisco Inc.	25.13	0.63	2.56
OTC	18.25	9.25	LDI Corporation	15.13	0.38	2.54
OTC	5.75	2.25	Selecterm Inc.	4.50	0.75	20.00

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Lotus shows Windows suite, users say they like the view

BY PATRICIA KEEFE
CW STAFF

ATLANTA — Dangling a summer ship date before long-patient users, Lotus Development Corp. last week offered its first public test drives of both 1-2-3 for Windows and Freelance Graphics for Windows at its booth in the Windows World pavilion of Comdex/Spring '91.

Initial user feedback indicated that the version of 1-2-3 for Windows 3.0 is everything they had hoped for. "It is head-to-head comparable with [Microsoft Corp.'s] Excel," a beta-test user under nondisclosure said. "If you were a Lotus pre-Windows follower, you won't be disappointed. If you are an Excel user, I don't know that this will make you switch."

In all, the Lotus booth featured five Microsoft Windows 3.0-compatible applications: 1-2-3, Freelance, CC:Mail, Amipro and a Notes client.

Positioned as a family of Windows products designed specifically to work together — what Lotus President Jim Manzi called "fit and finish" — the Lotus quintuplet represents the only competition to Microsoft's drive to position its clan of Windows products as one-stop shopping for Windows-based desktop productivity programs.

Both vendors have said they will provide shared tools, user interface conventions and common installation utilities between their Windows products. In Microsoft's case, it has bundled together Windows versions of Microsoft Word, Excel, Powerpoint and Mail and offers users a substantial savings over buying those packages separately.

No hasty decisions

Users such as Sheldon Laube, director of technology at Price Waterhouse, are pleased with 1-2-3 for Windows but intend to wait until Borland International, Inc. releases its Windows version of Quattro Pro before making any decisions. Price Waterhouse is a major Lotus account.

Taking a slight departure from the edicts of the Windows environment, Lotus announced that it will bundle copies of Adobe Systems, Inc.'s Type Manager font technology with Lotus Windows applications. Adobe's Type Manager has also been adopted by IBM and Digital Equipment Corp.

Microsoft is committed to shipping Truetype — font technology developed with Apple Computer, Inc. — with Windows 3.1, slated to arrive this summer. Adobe officials gave mixed signals at Comdex as to whether users will encounter any compatibility problems between the two font sets.

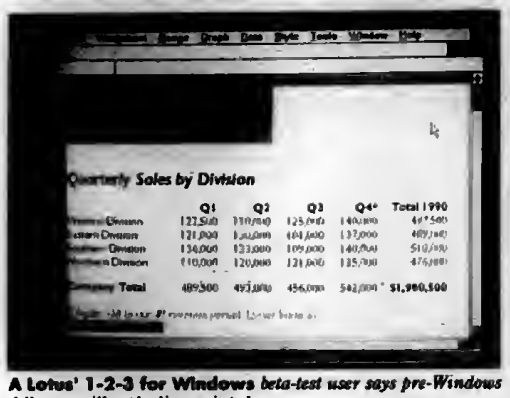
The Lotus/Adobe agreement provides Lotus with a core set of 13 typefaces from the Adobe Type Library with each application. Lotus users will gain true what-you-see-is-what-you-get capability.

Lotus' 1-2-3 for Windows will be the first of the firm's applications to ship with Adobe Type Manager. The long-awaited Windows version of the popular spreadsheet is in beta testing at 250 user sites and is scheduled to ship this summer. Users of earlier 1-2-3 versions will be able to access "1-2-3 Classic" menus by pressing the slash key.

Another key addition is a customizable suite of Smarticons that allow users to automate basic spreadsheet functionality and create, name and save sets of icons for use by others.

"Shortcut" functions simplify basic tasks such as Undo, Quick Copy, Search and Replace.

Users of 1-2-3/G, Lotus' OS/2 spreadsheet, will encounter some difficulty in moving their macros to 1-2-3 for Windows. Lotus said that problem will be corrected in a later release of 1-2-3 for Windows.



A Lotus' 1-2-3 for Windows *beta-test user says pre-Windows followers will not be disappointed*

REPORTER'S NOTEBOOK

Microsoft Chairman Bill Gates was one of three keynote speakers at Comdex/Spring '91. His was the most popular session, and the overflow crowd was sent to watch the speech on video in another room. Mostly, Gates updated the Windows success story: One year after its introduction, Windows 3.0 has sold 4 million copies along with 50,000 copies of the software developer's kit, according to Gates. "No software package has ever sold this well, except for MS-DOS," he boasted. Once "some of the large companies" (that is, **Lotus, Wordperfect** and **Borland**) ship Windows versions of their popular software, Gates predicted, sales of Windows applications should more than double.

While **IBM** and others have been trumpeting promises for what OS/2 Version 2.0 will deliver, some people at **Microsoft** seem skeptical. Steven Ballmer, Microsoft's senior vice president of systems software, told questioners after a panel discussion that he thought IBM was "incredibly aggressive" in its promise to deliver by year's end an OS/2 capable of running Windows applications better than Windows does. "I wouldn't want to be heading up that effort," Ballmer said.

Recently deposed **Zenith Data** executive Arthur Lambert was spotted next to Zenith Data's booth at Comdex, talking to another vendor. Lambert told *Computerworld* the parting was amicable, and he said he was looking forward to spending a bit more time on the golf course. His mission at Comdex? To network for a new job.

Borland's Philippe Kahn and **Lotus Software Business Group** Senior Vice President Frank King traded gibes while speaking on one of several spreadsheet panels. First, Kahn reeled off some numbers that didn't quite add up, prompting King to suggest that perhaps the problem lay with Quattro Pro's Recalc function. After Kahn explained his numerical faux pas, King allegedly made a comment about too many Borland upgrades. That was too much for Kahn, who snapped back a "look who's talking" charge and promptly dubbed Lotus' 1-2-3 "the Kleenex of spreadsheets." Translation: 1-2-3 is the disposable spreadsheet.

Gimmicks were few and far between at Comdex, but there was, of course, some relief from the relentless blaring of technology. **Unix International** captivated showgoers with a robot that was dressed up like a yachtsman and interacted with a live presenter. The animated mariner moved his arms and appeared to know exactly where his counterpart was at all times. Collectors loaded up on **Wordperfect** hats, **HP** neon-colored sunglasses and T-shirts galore. Attendees also lined up 50 deep to play with small, automated go-carts and stood in line to walk through **Intel**'s "Inside the Computer" tour. Intel upgraded its floor display from a tour through the inside of an 80386 microprocessor to one of an I486 processor.

And we still don't know who sponsored the woman encased in some sort of foam computer seen alternately wearing and dragging her enormous marshmallow across the exhibit floor.

Staff members Patricia Keefe and Michael Fitzgerald contributed to this report.

Notebooks obscure pen-based dreams

BY MICHAEL FITZGERALD
CW STAFF

ATLANTA — Comdex/Spring '91 attendees heard panelists dream aloud about pen-based computing, but hands-on portable reality was dominated by notebook computers.

"[Notebook] technology has matured to the extent of providing desktop capability in portable packages, and the marketplace realizes this," said William F. Ablondi Jr., vice president of new desktop strategies at BIS Strategic Decisions.

Ablondi and other analysts said pen-based computing generated excitement largely for its newness.

What little actual pen-based action there was occurred on the show floor, as NCR Corp. displayed its coming notepad product behind closed doors, and software developers such as Microsoft Corp., Go Corp. and Slate Corp. worked on deals.

On the show floor, NCR, Philips Corp.'s Magnavox subsidiary and others added their names to the list of notebook vendors, and a burgeoning portable peripherals market made itself evident.

Analysts agreed that the market for notebooks would continue to grow rapidly — Gartner Group/Infocorp predicted worldwide portable shipments of 13.5 million in 1995, up from 4.9 million predicted for next year.

Notebook Computer Co.'s *4½-pound battery-powered 486 and 486SX portables; priced at $4,500 each, drew plenty of interest. However, buyers were turned off when none of the floor models would turn on because of what was termed a missing piece of circuitry*

Despite the presence of Intel Corp. 80386SL notebooks from Zenith Data Systems and Twinhead Corp., Comdex was not the SL hotbed some analysts had predicted. Analysts cited persistent rumors of bugs in the current Intel production runs and reports that Intel will not be shipping the SL in volume until the third quarter. Intel strongly denied both rumors.

Can't expect perfection

"There are always errata on any chip," said Dave House, Intel's senior vice president of architecture and applications. "The version for volume shipment has recently gone into production."

Zenith Data said it was already receiving bug-free chips in volume and claimed it would meet the July ship date for its Mastersport 386SL notebook. A source close to Twinhead, however, said the company had received only 100 SL chips, all with patchable bugs. It does not expect to be able to ship its Supernote 20C until September.

IBM PS/2 models join price cut melee

While reductions may not be enough to draw new customers, they might at least keep the old ones

BY CHRISTOPHER LINDQUIST
CW STAFF

Personal computer price cutting gained more momentum last week with IBM's announcement of 6% to 24% reductions on some models in its Personal System/2 line.

Following on the heels of mid-April cuts by Compaq Computer Corp. [CW, April 15], the cuts were greeted with hallelujahs by dealers, which claimed their prayers for competitive pricing had been answered. While some users said it may now be easier to reject lower priced clones, others said buying IBM will still be a high-priced religion.

John Biglin, a PC coordinator and analyst at General Waterworks Management and Service Co., said he doubted the price cuts would be enough to bring him into the IBM fold. "If their pricing were more equal, then I would consider it more, but it's been our experience that we can buy an equal or better performing system for less money."

While the cuts may not attract new customers, they may help IBM keep some old ones.

A manager at a major Chicago-area insurance company said his firm already buys IBM Personal Computers but is beginning to look at Micro Channel Architecture-based clones such as those produced by NCR Corp. and Reply Corp. He said the price cuts, while not major, "will make it harder for a clone to get in the door."

Sky-high prices

Analysts noted that even with the cuts, IBM still carries some of the highest prices in the industry. "Compaq's been accused of being the premium price setter," said Joanne Stahel, president of Storeboard/Computer Intelligence in Dallas, but "Compaq is still priced lower [than IBM]."

However, IBM dealers were more upbeat about the news. Stricken dealer Businessland, Inc. will be aided by the cuts, according to spokesman Tom Pelandini, who said corporate buyers are willing to pay a premium for name brands such as IBM, Apple Computer, Inc. and Compaq. But "the price differential had grown quite a bit, and we're pleased to see Compaq's reduction and now IBM's reduction in prices," he added. "This will help us," he said.

It will also help Computerland Corp., according to Steve Halland, director of IBM marketing at the firm. He said he expects to see a "substantial" increase in sales volume because of the new pricing. He added that IBM has been getting pressure for price cuts for some time.

Another boon for dealers — and possibly for buyers — is IBM's apparent decision not to cut dealer discounts along with prices as Compaq did during its last bout of price slashing. The entire discount is coming straight from IBM, not dealer margins, according to Halland.

The clone vendors, however, showed little concern about the announcement, although some companies had made cuts of their own prior to the IBM announcement.

NCR had anticipated IBM's cuts with price reductions of 15% to 35% one week before the IBM announcement. Alok Mohan, vice president of NCR's Workstation Products Division, said the price cuts were "nothing unusual — it's the time of the year for them, and street prices are eroding less than retail prices."

One step ahead

Zenith Data Systems, the Buffalo Grove, Ill.-based subsidiary of Groupe Bull, cut its prices the day before IBM did.

The cuts are "about what we thought," said Dan Rosensteel, Zenith Data's vice president of marketing. "We anticipated their cuts, and we think we're well-positioned."

Samsung Information Systems America, Inc., the San Jose, Calif.-based subsidiary of Samsung Electronics Co., saw the cuts as a legitimization of the PC clone market. "We think IBM is reacting to pressure from companies like ours. The market is accepting us as being as good as or better than Compaq and IBM," Samsung spokesman William H. Matlock Jr. said.

Midwest correspondent Michael Fitzgerald contributed to this report.

Joining the fray

IBM is the latest firm to enter the PC price cut race, with reductions on its Personal System/2 line

Sample cuts	Before May 20	After May 20	Percent cut
Model 30 286 E01	$1,845	$1,625	11.9%
Model 55 SX 061	$3,295	$2,945	10.6%
Model 80 386 081	$5,495	$4,395	16.4%
Model 80 386 A31	$11,495	$8,695	24.3%

Source: IBM

CW Chart: Janet Gennerso

IBM

FROM PAGE 1

president of the Micro Manager's Association, conceded that they would have to at least consider such an offer from IBM.

Jude Gartland, a senior vice president at the Lehman Brothers Division of Shearson Lehman Brothers, Inc., is one of those users sitting on a pile of 286s.

Whether the trade-in plan will work for him depends on whether the salvage value exceeds the trade-in credit.

For example, if the unit is worth $800 and the credit is only $500, Gartland said he would be better off downstreaming the computer within his organization.

On the other hand, some accounts would rather take the $500 credit coupled with cheap IBM credit than try to raise income by selling the boxes for $800 each, said Frank Dzubeck, president of Communications Network Architects, Inc. in Washington, D.C. The resulting paperwork from the added income, he said, would not be worth the effort for some of these sites.

IBM is so intent on finding a way to spur users into upgrading their systems that it will even consider "deploying" Windows, Guglielmi said.

'Variety of alternatives'

IBM "will work with individual customers on a variety of alternatives, which may or may not evolve into a more widespread offering," Guglielmi said.

IBM's immediate goal is to move users to the 32-bit OS/2 2.0, which has a planned delivery date of October or November. But before users can upgrade their software environment, they must beef up the hardware to at least a 4M-byte 386.

Yet despite many corporate commitments to standardize on the 80386 microprocessor, most Fortune 1,000 companies continue to wallow in a sea of 286-based machines.

It is just not considered cost-effective for many businesses, particularly given the recession, to migrate en masse to the more powerful 386.

"Many of our clients want to shelve their 286s, but the CFO is telling them no because they haven't been depreciated yet. They can't afford it," Dzubeck said.

The result has been stagnating sales, leaving struggling personal computer hardware and software vendors to find a way to persuade users to move up.

Hardware suppliers have either announced disappointing quarterly results or been forced to revise revenue estimates. Compaq Computer Corp. recently scaled back revenue expectations 15% for this quarter.

Brink of disaster

Reseller Businessland, meanwhile, teeters on the brink of financial disaster, falling $42.9 million into the red during the quarter ended March 30 [CW, May 20].

Apple Computer, Inc. has moved to shore up its defenses by announcing plans to lay off 1,500 employees (see story page 109).

Guglielmi admitted that IBM's PC inventory is larger than it would like. "We've got to start moving inventory," he said.

Matt Cain, a senior research analyst at Stamford, Conn.-based Meta Group, Inc., said IBM suffered a 17% unit shipment drop across the Personal System/2 line last quarter.

According to Guglielmi, IBM has come to the realization that it must "generate more pull from end users" for OS/2.

"Microsoft has done a better job of merchandising Windows," he acknowledged.

A second time around

IBM's acknowledgment that it is considering a new trade-in program to partially underwrite user demand for more powerful systems would be its second such attempt.

Its first try came in July 1988, months after the introduction of the Micro Channel Architecture-based Personal System/2 family. IBM Personal Computer AT and XT users were offered $200 to $300 trade-in bounties through local dealers. The program bombed, in part, observers said, because users were leery of buying into a new, proprietary architecture. Eventually, it petered out from lack of interest.

This time around, IBM is considering offering $500 trade-in allowances to 80286 users, good toward a 386-based PS/2, said Matt Cain, a senior research analyst at Meta Group, Inc. in Stamford, Conn.

It may also be part of a growing trend. Tandy Corp. and Digital Equipment Corp. already have PC trade-in programs under way.

Tandy's Radio Shack stores launched "Moving On Up" late last month. The program offers business customers up to $500 trade-in credit toward the purchase of either a 286- or 386-based Tandy computer. The trade-in credit is offered on earlier PCs from both Tandy and competitors. The deal is good through June 30.

DEC, which recently plunged back into the PC market with a line of high-end computers, is offering a flat $500 credit on "any old industry-standard PC" under its PC Trade-In Deal, according to a DEC ad. The rebate is good toward any DEC PC, starting with its 80386SX model and extending through its 1486 boxes.

Representatives of Compaq Computer Corp. and Dell Computer Corp. said they have no plans to offer similar programs.

PATRICIA KEEFE

On-line commemorative stamp

At Comdex, artist Joni Carter *demonstrated the multimedia technology she used to create this stamp and four others for a series commissioned by the U.S. Postal Service to commemorate the 1992 Olympic Games*

COMDEX SHORTS

It was largely a Windows world at Comdex/Spring '91, and nowhere was that more apparent than at the packed-to-the-gills **Microsoft** booth, which lured showgoers with, among other things, brightly colored fanny packs. On the serious side, Microsoft announced two partnerships and a special price on its Microsoft Office bundle amid a sea of third-party Windows developers' tools and application ports (see stories pages 106 and 108).

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A fourth package has been added to the latest version (1.6) of Microsoft's Office for Windows, which also features s promotional price of $750 through Dec. 31. First introduced in October 1990, Office previously included Windows versions of Excel, Word and Powerpoint at a cost of $995; purchased separately, the software would cost $1,500. Last week, Microsoft tossed in a single-user license for Mail for PC Networks and said that until Sept. 30, it will send a free Mail server package to users who license 20 units of Office for Windows.

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Microsoft signed a cooperative marketing agreement with **Powersoft Corp.**, which just shipped Powerbuilder 1.0, a graphically oriented client/server applications development environment targeted at information systems. Powersoft will become one of Microsoft's SQL Business Partners and will market and support Powerbuilder bundled with Microsoft's SQL Server database. Microsoft also said it has licensed **Caseworks, Inc.**'s Knowledge Assisted Software Engineering tool set for inclusion with future development products.

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Westbrook Technologies, Inc. introduced Imagic, a software-based imaging package for Intel 80386-class personal computers. The $895 program uses Microsoft's Windows 3.0 environment as a front end and an indexing scheme not reliant on Boolean logic. "We're not trying to sell the MIS director," said Dennis Graham, president of the Westbrook, Conn., company. Users, he said, need to know they don't have to spend $25,000 per terminal to deploy an imaging solution.

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Also released was **Pioneer Software**'s Q+E Database Library, which is said to provide developers of Windows programs and macros with programmatic access to a variety of database management systems. It is a collection of Dynamic Link Libraries (DLL) that provides a common call-level interface for database access from any application or tool capable of calling a DLL. That includes any macro, programming language script or Windows product. It also provides an industry-standard SQL interface. The database library is scheduled to ship next month and retails for $399.

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Spinnaker Software Corp. introduced Spinnaker Plus Version 2.5, a cross-platform hypermedia applications development software package, and Plus Reports, a flexible report generattr. Spinnaker Plus 2.5 is said to be up to five times faster than previous versions. It implements Windows Dynamic Data Exchange and supports its DLL. The product is slated to ship Aug. 15.

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Philips Corp.'s **Magnavox** subsidiary introduced seven models of its Headstart desktop PC line based on the Intel 80286 and 80386 chips. Pricing ranges from $999 to $2,599 for a 33-MHz 386DX. **Geoworks'** Ensemble and **Lotus'** 1-2-3 Version 2.2 come bundled with all the models. Magnavox also introduced the Metalis 286- and Metalis 386SX-based notebooks, weighing 6.9 and 6.8 pounds, respectively. **Cumulus Corp.** announced a line of 486DX-based systems starting at $2,195.

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Clarion Software, developer of Clarion Professional Developer, has launched a 24-hour, toll-free information service along with multiple CPU network service.

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There was no lack of Unix boxes at Comdex. **NCR** displayed its System 3447, running Intel's still-unannounced 50-MHz I486 chip and scheduled for October delivery. **Samsung Information Systems America, Inc.** brought out the System Master 486/33TE and the SGS-19 X Window System Terminal, a 19-in. monochrome X terminal running **Advanced Micro Devices'** 29000 reduced instruction set computing processor. The System Master is slated to ship next month and will cost $7,699, while the terminal will ship in July for $2,999.

Windows takes Basic steps

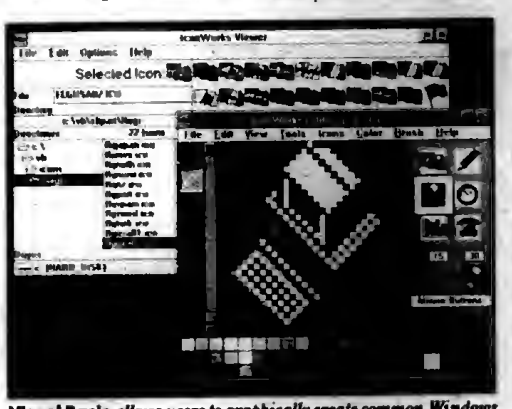
BY CHRISTOPHER LINDQUIST
CW STAFF

ATLANTA — Microsoft Corp. unveiled a language product last week at Windows World '91 that it claims will greatly simplify the task of creating applications for Windows.

Visual Basic allows users to graphically create common Windows interface controls such as buttons and menus without writing code. The interface is then attached to the underlying program using a version of Microsoft's Quick Basic programming language, eliminating the need for the Microsoft Windows Software Developer's Kit (SDK).

Despite its reported ease of use, Microsoft is not positioning Visual Basic as a programming tool for end users but rather as a full-size language for programmers, according to Charles Stevens, general manager of Microsoft's data access business unit in applications.

"It's definitely s general-purpose programming language," Stevens said. "We're not trying to say it's an end-user tool."



Visual Basic *allows users to graphically create common Windows interface controls without writing any code*

Craig Ellis, a senior programmer/analyst at Reuters Information Services and a Visual Basic beta-test user, said the product is ideal for creating prototypes and short-term Windows programs. "It's a great tool. For applications and tools that we have to write that have a short life span, it's great," be said.

However, the price for ease of use appears to be a slight loss in speed of execution. Ellis added that the product would probably not be used for critical applications because of this.

"We use Windows as our application platform, but we need things that are time-critical, and that's not going to give it to you," he explained. "It's not that much slower, but we need that extra yard." Ellis said Reuters' more important applications will still be developed using the Microsoft C compiler and the Windows SDK.

Ellis also said Visual Basic was extensible through its support of other languages that can compile to Windows' Dynamic Link Library format.

The product should be generally available next month, Microsoft said, at s suggested retail price of $199. A Visual Basic Control Development Kit will be available next month for $49.95.

VGA on its way out?

BY MICHAEL FITZGERALD
CW STAFF

ATLANTA — In a move that could hasten the replacement of its Video Graphics Array standard, IBM said it expected to develop its new 1,024- by 768-pixel Extended Graphics Array (XGA) to the XT/AT bus.

While not offering a timetable and cautioning that he was not "preannouncing" a product, Jon Vitello, manager of graphics product management and graphics subsystems at IBM, told an audience at a panel on XGA, "We recognize a need to support the [XT/AT] bus."

Currently, XGA works only with the Micro Channel Architecture bus. Members of the Video Electronics Standards Association (VESA), an industry group made up of graphics board makers, monitor makers and other companies including IBM, said at its meeting here prior to Comdex/Spring '91 that they wanted XGA support of the XT/AT bus and its follow-on, the Extended Industry Standard Architecture.

James A. Anderson, director of marketing at Headland Technologies, Inc. and chairman of VESA, said an XT/AT version of XGA "is our main concern." He said a quick move to market by IBM was key to developing the new standard.

One analyst agreed that IBM has to move XGA to the XT/AT bus to ensure the strategy's success.

"[XT/AT] support will make it a standard," said Jon Peddie, president of graphics research firm Jon Peddie Associates in Oakland, Calif. Peddie said XGA would give the huge number of non-Windows applications users higher performance and better resolution for future non-Windows versions of products such as Wordperfect Corp.'s Wordperfect word processor and Ashton-Tate Corp.'s Dbase line.

Multimedia is a snap

Cardinal Technologies *introduced at Comdex/Spring '91 its Snapplus board, combining VGA graphics with video. Accommodating the RGB, S-Video and NTSC video standards, the board allows capture of live and still video in 24-bit color and will be available this summer for less than $1,000.*

ICA to highlight DEC's Phase V for VMS tool

BY ELISABETH HORWITT
CW STAFF

ANAHEIM, Calif. — Two watershed events are expected to enliven an otherwise flat International Communications Association (ICA) '91 conference next week.

Digital Equipment Corp. is expected to provide its users with the first pieces of its long-awaited Decnet Phase V for VMS. Meanwhile, a potentially ground-breaking task force of information systems executives from four Fortune 500 companies with Belgian operations will meet to hammer out a set of guidelines for Belgium's Postal Telephone and Telegraph authorities (PTT) to address the Fortune 500 companies' networking needs.

DEC will bring out the first pieces of Open Systems Interconnect (OSI)-compatible Decnet Phase V as part of a phased rollout scheduled to take place this year, according to Frank Dzubeck, president of Communications Network Architects, Inc. in Washington, D.C. The introduction will include the latest International Organization for Standardization versions of File Transfer, Access and Management and X.400 electronic mail protocols.

Also expected to be announced at ICA, Dzubeck said, is a multiprotocol router that will support Decnet Phase V-OSI, Transmission Control Protocol/Internet Protocol and the proprietary Decnet Phase IV protocols. In addition, DEC is expected to announce new third-party product support for its OSI-compatible integrated network management platform, Enterprise Management Architecture.

A DEC spokeswoman confirmed that DEC will be making a major announcement at ICA June 3.

ICA '91 will also host the first meeting of the four-member task force of Fortune 500 IS managers whose mandate is to provide Regie des Telegraphes et Telephones (RTT) with input on how the Belgian carrier can provide the same type of volume discounting and specialized pricing packages that U.S. carriers now offer their large customers, according to Glenn Miller, manager of worldwide videoconferencing at The Upjohn Co. "We urged RTT to hear us out in that a great number of us have growing facilities and/or European headquarters based in Belgium."

Dare to be different

What makes this task force potentially different from past dialogues between U.S. users and European carriers is that the Belgian PTT has shown a willingness to listen and even act on suggestions, Miller said.

RTT has been among the most aggressive of the PTTs in lowering its international tariffs and introducing enhanced business services. However, the carrier was apparently unacquainted with specialized pricing practices, Miller said.

The task force resulted from a series of roundtables that the Belgium RTT has held with U.S.-based Fortune 500 companies over the past 1½ years.

Roundtable members said they would like something along the lines of AT&T's Tariff 12 but in a simpler form because they do not have the international telecommunications personnel to analyze complex tariff offerings, Miller said.

Apple cuts back, eliminates 1,500 jobs

Largest layoff in firm's history could help it keep technological promises

BY JAMES DALY
CW STAFF

CUPERTINO, Calif. — The cutback of approximately 1,500 jobs at Apple Computer, Inc. may allow the streamlined company to deliver on technological promises and respond to increasing marketplace pressure from IBM Personal Computer clones, Apple customers and analysts said last week.

Apple Chairman John Sculley announced the largest layoff in the company's history last week when he said 10% of its 15,600-member work force would be let go as part of a companywide restructuring to reduce costs. Analysts estimated that the move could save Apple more than $60 million annually.

"Sculley has shown he is committed to a cost structure that will allow the company's products to stay competitive and affordable," said Ben Rose, a senior analyst at Technology Investment Strategies Corp. in Framingham, Mass.

Since taking over Apple's research and development efforts last year, Sculley has outlined an aggressive and costly product update schedule that includes a revamped laptop computer as well as Apple's entries into the notebook and pen-based computer markets.

Anxiously awaiting

Steve Bergfield, manager of computing standards at Martin Marietta Corp. in Chantilly, Va., said he is "very anxious" to see the new laptops and has put off purchasing decisions until their arrival. "Ultimately, Apple's cost cutting could help us keep our expenses in line," he said.

Apple is also up against severe competition from machines equipped with Microsoft Corp.'s Windows 3.0. "Apple faces a lot of pressure from cheap IBM PC clones that are perceived to have more value," said Rob McPhee, a senior engineer at Du Pont Co. in Wilmington, Del. "I guess Sculley figured it's time to pay the piper."

The cutbacks are a by-product of a changing business strategy, with Apple shifting from selling expensive machines with high profit margins to high volumes of low-cost Macintoshes.

Last October, Apple unveiled three entry-level models that sent unit sales for the quarter ended March 31 soaring 85% over figures from one year earlier. Profit margins, however, dipped from 54.7% to 48.8%. Some analysts said the success of the machines may have also hurt sales of Apple's more costly Macintosh, which generates more profit margin.

Apple spokesman Christopher Escher said the impending layoffs will occur "worldwide and throughout all levels" of the $5.56 billion firm. Although Apple has been hiring steadily since the new high-volume, small-margin strategy was initiated last fall, Escher said the company had to accelerate its expense reduction process because of the rapidly shifting customer preference for low-cost products.

The administrative level is expected to take the brunt of the cutbacks. "Apple has a lot of fat in the managerial level," said Larry Hickey, an investment analyst at First Analysis Corp. in Chicago. "It seems unlikely that they'd cut anyone in R&D or manufacturing, especially considering their increase in unit shipments."

Apple is also expected to begin selling through high-volume superstores such as Comp USA, Inc., which receives a lower percentage of the sale price than computer specialty outlets do.

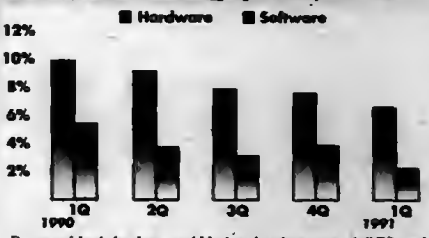
Escher said Apple is also considering other measures to reduce expenses, including consolidating facilities, curtailing discretionary spending and eliminating contractor services.

Most of the layoffs are slated to be complete by the end of the fiscal quarter June 28, with the remainder occurring by Sept. 30, the end of the fiscal year.

The restructuring costs will result in a onetime charge against third-quarter profits, which analysts estimated to be approximately $15 million.

Unwelcome mat

Despite scoring big with low-end systems in the consumer market, Apple Computer, Inc. is still struggling in the corporate world



Percent of Apple hardware and Macintosh software out of all PCs and software purchased by U.S. computer sites with 500 or more employees

Source: Computer Intelligence

CW Chart: Janell Genovese

Glitch let Scud beat Patriot

BY MITCH BETTS
CW STAFF

HUNTSVILLE, Ala. — A computer failure prevented a Patriot missile launcher from firing at the Iraqi Scud missile that killed 28 U.S. soldiers in Dhahran, Saudi Arabia, during the Persian Gulf war, according to the just-retired manager of the U.S. Army's Patriot program.

Col. Bruce Garnett said an extensive investigation traced the problem to a relatively minor algorithm in the Patriot's complex software, which processes radar data to track an enemy missile's flight path.

The Patriot's radar spotted the incoming Scud, but the faulty algorithm prevented the data from being processed. Garnett said in a brief telephone interview with *Computerworld*. In essence, a freak combination of six to 10 abnormal variables — including the unusually high speed of the incoming Scud — kept the system from recognizing the target.

"It was a one-in-a-million thing that was never detected in thousands of hours of testing," Garnett said.

The Scud attack on Feb. 25 killed 28 and injured 97 U.S. soldiers in a metal barracks near Dhahran, making it the deadliest Iraqi attack and the only time a Patriot failed to fire at an incoming Scud.

A FREAK COMBINATION of six to 10 abnormal variables kept the system from recognizing the target.

Garnett said it took "several weeks" for a team of government and contractor engineers to trace and re-create the software problem in a laboratory. Once identified, the problem was easily fixed, and revised software was sent overnight to all Patriot batteries, he said.

Second-class postage paid at Framingham, Mass., and additional mailing offices.
Computerworld (ISSN 0010-4841) is published weekly, with a single combined issue for the last week in December and the first week in January by CW Publishing/Inc., 375 Cochituate Road, Box 9171, Framingham, Mass. 01701-9171.
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- Carlene Ellis, Intel Corp.

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History
Biology
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Simmons: Biology; Mercereau: History; Carlson: English literature; Ellis: Mathematics

David J. Lors

What do you get if you lose?

Winners of Computer Sciences Corp.'s Technical Excellence Award got to go to the beach and stand in a PC sand sculpture under the burning hot sun in a black tuxedo, black socks, black shoes, black top hat and gloves.

As if real press releases aren't malodorous enough

Fourth Shift Corp. announces the Schnozitron, a business analysis tool that assesses the current status of departments. Detects scent of success or the fragrance of failure. Features include CIM Odorizers, Nose-Link. – *From a fictitious press release*

Top 10 fastest growing industries 1987-91

1. X-ray apparatus and tubes.
2. Electromedical equipment.
3. Medicinals and botanicals.
4. Semiconductors and related devices.
5. Machine tools.
6. Farm machinery and equipment.
7. Oil and gas field machinery.
8. Computers and peripherals.
9. Surgical appliances and supplies.
10. Surgical and medical instruments.

Source: U.S. Industrial Outlook (Based on constant dollar shipments)

Do you have anecdotes about your users, your boss or your job? Know any industry trivia? If so, please contact Lory Zottola at (800) 343-6474. If we use your ideas, we'll send you a gift.

INSIDE LINES

Come on down!

▶ Novell is putting together its own game show in which users and contestants will find out what they can win if they switch from networks made by 3Com, Microsoft, Banyan, Sun and Digital Communications. Effective now through Oct. 31, Novell will subtract the list price of its previous networks from the list price of its Netware 2 and 3. Novell resellers will win cash and precious metals for turning over new customers.

Aiming to serve its clients

▶ DEC will announce a host of database products this week at Database World in Washington, D.C., highlighting a new data integration server with client/server capabilities and the latest version of its RDB relational DBMS. Many of the new offerings will be aimed at helping DEC customers integrate applications across the RDB and Ultrix/SQL databases.

More reason to pass on ISDN

▶ At the ICA show next week, we hear Sprint and MCI are expected to announce support for Ascend's Multiband box, whose specialty is amalgamating multiple 56K bit/sec. lines into whatever amount of bandwidth a particular device or application needs at a given time — up to 1.5M bit/sec. AT&T is also said to be talking to Ascend so it too can offer on-demand bandwidth allocation over non-ISDN links.

Loose chips sink tips

▶ While Intel has yet to announce its 50-MHz I486 chip, it gave out a trend analysis last week that included a Dhrystone benchmark of a 50-MHz I486. The chart said the chip will run at 40.5 million instructions per second (MIPS), as opposed to 34.5 MIPS for an IBM RISC System/6000. Dave House at Intel added that Intel has spent $600 million on research and developement for the X86 line and said that is "more than the total cumulative revenue of all RISC chips."

All aboard the info train

▶ There are reports that IBM is thinking of leaving the Video Electronics Standards Association (VESA) because of a February leak that said IBM might enter into an OEM contract to sell its Extended Graphics Array (XGA) product to third-party vendors. The leak was wrong, but IBM is apparently worried that it can't trust committee members enough to participate fully in VESA's technical committees. IBM denies it is leaving VESA, and XGA committee chair Bill Knapp of Cirrus Logic confirmed IBM's continued participation on the XGA committee. But sources at VESA said the issue was real, and feelings ran high at its Comdex meeting on the subject of how to stop leaks.

How to drive up CD-ROM sales

▶ Some IBM users are discovering yet another little "gotcha" in the big Application System/400 announcement last month. Buried in a mountain of IBM announcement letters is the fact that manuals and documentation, which once came free with the new operating system, are now a separately charged item, at $1,500 to $2,500 extra. IBM will give customers those manuals free of charge on a CD-ROM disk; users will need a CD-ROM player and IBM's Bookreader software.

Reaching out

▶ A spokesman for Cabletron Systems, maker of the Spectrum enterprise network management system, said the company plans to make a joint marketing and product development announcement with workstation vendor Silicon Graphics on June 17. An educated surmise might be that Spectrum support for Silicon Graphics' Ardis workstation will be added to the 40-plus other devices already supported by Spectrum and that Spectrum will somehow integrate Silicon Graphics' Netvisualizer protocol analysis tool.

Reseller opportunity? Last week's item about Microsoft's Windows Resource Kit prompted several readers to contact News Editor Pete Bartolik to place orders. He's not in that business yet, but when you think about it, if Microsoft can get into the print business . . . Anyway, you have to contact Microsoft directly for that product. Our hot lines deal only with information, and if that's what you have to barter, call (800) 343-6474, send a fax to (508) 875-8931 or address a tip to 76537,2413 on Compuserve.

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